VPDES PERMIT FACT SHEET

This document gives pertinent information concerning the reissuance of the VPDES permit listed below. This permit is being processed as a Major, Industrial permit. The effluent limitations contained in this permit will maintain the Water Quality Standards (WQS) of 9 VAC 25-260. The proposed discharge will result from the operation of an electrical generating station (SIC Code: 4911 – Electrical Services). This permit action consists of reissuing the permit with revisions to the permit, as needed, due to changes in applicable laws, guidance, and available technical information.

1. Facility Name and Address:
   Tenaska Virginia Generating Station
   2300 Branch Road
   Scottsville, VA 24590
   Location: 2300 Branch Road, Scottsville

2. Permit No. VA0090905; Expiration Date: June 30, 2012

3. Owner: Tenaska Virginia Partners, L.P.
   Contact Name: Joseph Finocchiaro
   Title: Senior Environmental Engineer
   Telephone No: (402) 691-9577

4. Description of Treatment Works:
   The facility consists of four external outfalls and two internal outfalls. Outfalls 001 and 004 are comprised of effluent from Outfall 101 (Internal – Low Volume Waste Stream) and Outfall 201 (Internal – Cooling Tower Blowdown). The internal outfalls discharge to the detention pond first, then to Outfall 001 or 004. The facility is designed to discharge from only one outfall at a time. Outfalls 002 and 003 consist of storm water runoff from impervious areas. The treatment units are shown in the schematic included in the permit reissuance application.

   Average Discharge Flow (January 2008 – present) = 0.45 MGD
   Design Average Flow = 1.25 MGD (Outfall 001)
   1.73 MGD (Outfall 004)

5. Application Complete Date: January 23, 2012

   Permit Writer: Jason R. Dameron Date: March 16, 2012
   Reviewed By: Brandon Kiracofe Date: March 16, 2012

   Public Comment Period: May 24, 2012 to June 23, 2012

6. Receiving Stream: Middle Fork Cunningham Creek
   River Mile: Outfall 001: 2.61
   Use Impairment: Yes
   Special Standards: None
   Tidal Waters: No
   Watershed Name: VAV – H32R Cunningham Creek
   Basin: James; Subbasin: N/A
   Section: 10; Class: III

   Receiving Stream: Rivanna River
   River Mile: Outfall 004: 15.55
   Use Impairment: No
   Special Standards: None
   Tidal Waters: No
   Watershed Name: VAV – H31R Lower Rivanna/Ballinger Creek
   Basin: James; Subbasin: N/A
   Section: 10; Class: III

7. Operator License Requirements per 9 VAC 25-31-200.C: NA

8. Reliability Class per 9 VAC 25-790: NA

9. Permit Characterization:
☑ Private ☐ Federal ☐ State ☐ POTW ☐ PVOTW
☐ Possible Interstate Effect ☐ Interim Limits in Other Document (attach copy of CSO)

10. Discharge Location Description and Receiving Waters Information: Appendix A

11. Antidegradation (AD) Review & Comments per 9 VAC 25-260-30:
Tier Designation: Middle Fork Cunningham Creek: Tier 1 Rivanna River: Tier 2

The State Water Control Board's WQS include an AD policy. All state surface waters are provided one of three levels of AD protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 waters have water quality that is better than the WQS. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 waters are exceptional waters and are so designated by regulatory amendment. The AD policy prohibits new or expanded discharges into exceptional waters.

The AD review begins with a Tier determination. Middle Fork Cunningham Creek in the immediate vicinity of the Outfall 001 discharge is listed as impaired for non-attainment of bacteria and aquatic life (benthic impairment). A non-attainment of bacteria is not used as a sole basis for classifying a receiving stream as Tier 1; however, the benthic impairment results in a Tier 1 classification for the receiving stream. Because this facility discharges to Tier 1 waters, antidegradation baselines are not required at Outfall 001; however, permit limits were set such that all downstream WQS will be maintained. Although the receiving stream is classified as Tier 1, DO and Ammonia-N were evaluated as if the receiving stream was a Tier 2 water. See Appendix C for further discussion.

The Rivanna River in the immediate vicinity of the Outfall 004 discharge is determined to be a Tier 2 water because there are no data available to indicated WQS violations or WQS just being met. No significant degradation of the existing water quality will be allowed. Antidegradation baselines were calculated for the Rivanna River as shown in Appendix C.

12. Site Inspection: Performed by Bill Maddox on August 25, 2010

13. Effluent Screening and Effluent Limitations: Appendix B

14. Whole Effluent Toxicity (WET) Program Requirements per 9 VAC 25-31-220.D: Appendix B

15. Solids/Residue Use or Disposal: Solids/residues from the filtering process are sent to a landfill for disposal.

16. Bases for Special Conditions: Appendix C

17. Material Storage per 9 VAC 25-31-280.B.2: This permit requires that the facility's O&M Manual include information to address the management of wastes, fluids, and pollutants which may be present at the facility, to avoid unauthorized discharge of such materials.

18. Antibacksliding Review per 9 VAC 25-31-220.L: This permit complies with the antibacksliding provisions of the VPDES Permit Regulation.

19. Impaired Use Status Evaluation per 9 VAC 25-31-220.D: The facility discharges to the Middle Fork Cunningham Creek and the Rivanna River. The stream segment receiving the effluent on Middle Fork

Cunningham Creek is listed as impaired for non-attainment of bacteria and aquatic life (benthic impairment). The stream segment receiving the effluent on the Rivanna River is not listed as impaired. A TMDL for the Middle Fork Cunningham Creek impairments has not been developed at the time of this reissuance. The permit contains a re-opener condition that may allow the permit limits to be modified, in compliance with section 303(d)(4) of the Act if a TMDL is approved.

19. NPDES Industrial Permit Rating Worksheet: See Appendix A
Major ☑ or Minor ☐ Total Score = 600

21. Storm Water Management per 9 VAC 25-31-120: Application Required? ☑Yes ☐No
Storm water special conditions are included in the permit.

22. Compliance Schedule per 9 VAC 25-31-250: There are no compliance schedules included in the reissued permit.

23. Variances/Alternative Limits or Conditions per 9 VAC 25-31-280.B, 100.J, 100.P, and 100.M: The applicant requested a waiver from using a 24-hour composite sample and has proposed to use a 2-hour composite sample instead. The waiver request was sent to EPA and no comments were received.

24. Virginia Environmental Excellence Program (VEEP) Evaluation per § 10.1-1187.1-7: At the time of this reissuance, is this facility considered by DEQ to be a participant in the Virginia Environmental Excellence Program in good standing at either the Exemplary Environmental Enterprise (E3) level or the Extraordinary Environmental Enterprise (E4) level? ☐ Yes ☑ No

25. Nutrient Trading Regulation per 9 VAC 25-820: See Appendix B
General Permit Required: ☐ Yes ☑ No

26. Threatened and Endangered (T&E) Species Screening per 9 VAC 25-260-20 B.8: Because this is not an issuance or reissuance that allows increased discharge flows, T&E screening is not automatically required. However, in accordance with the VPDES Memorandum of Understanding, T&E screening was coordinated on March 26, 2012 through DCR & DGIF based upon request. Comments were received from DCR on April 19, 2012 and are included in the permit processing file. Comments were considered in the drafting of the permit and were also forwarded to the permittee. No comments were received from DGIF.

27. Public Notice Information per 9 VAC 25-31-280.B: All pertinent information is on file, and may be inspected and copied by contacting Jason Dameron at: DEQ-Valley Regional Office, P.O. Box 3000, Harrisonburg, Virginia 22801, Telephone No. (540) 574-7824, jason.dameron@deq.virginia.gov.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing if public response is significant. Requests for public hearings shall state the reason why a hearing is requested, the nature of the issues proposed to be raised in the public hearing and a brief explanation of how the requester's interests would be directly and adversely affected by the proposed permit action. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given.

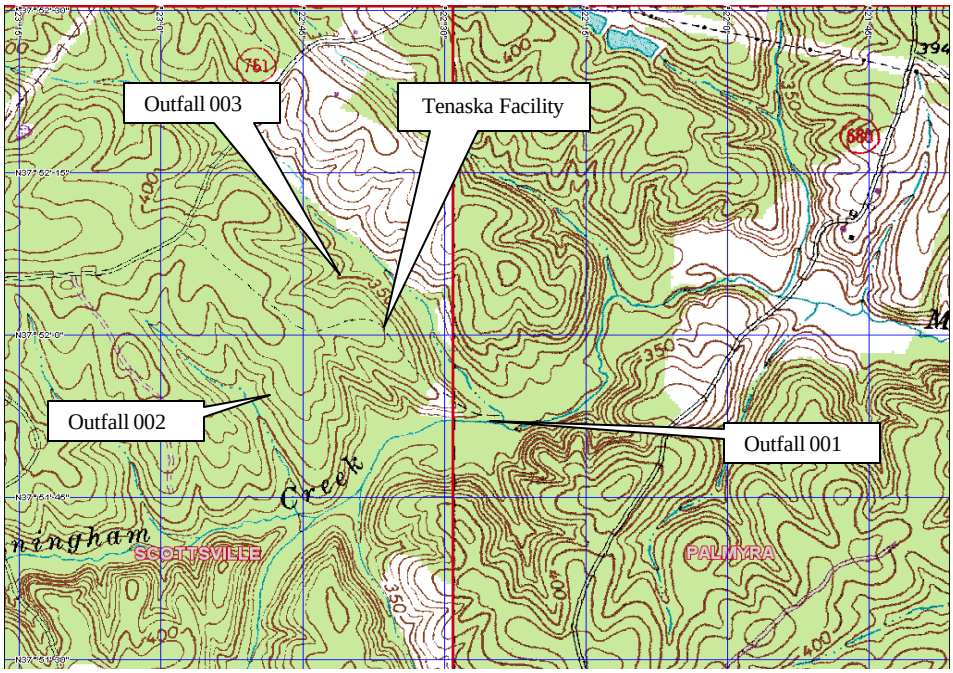
28. Historical Record:

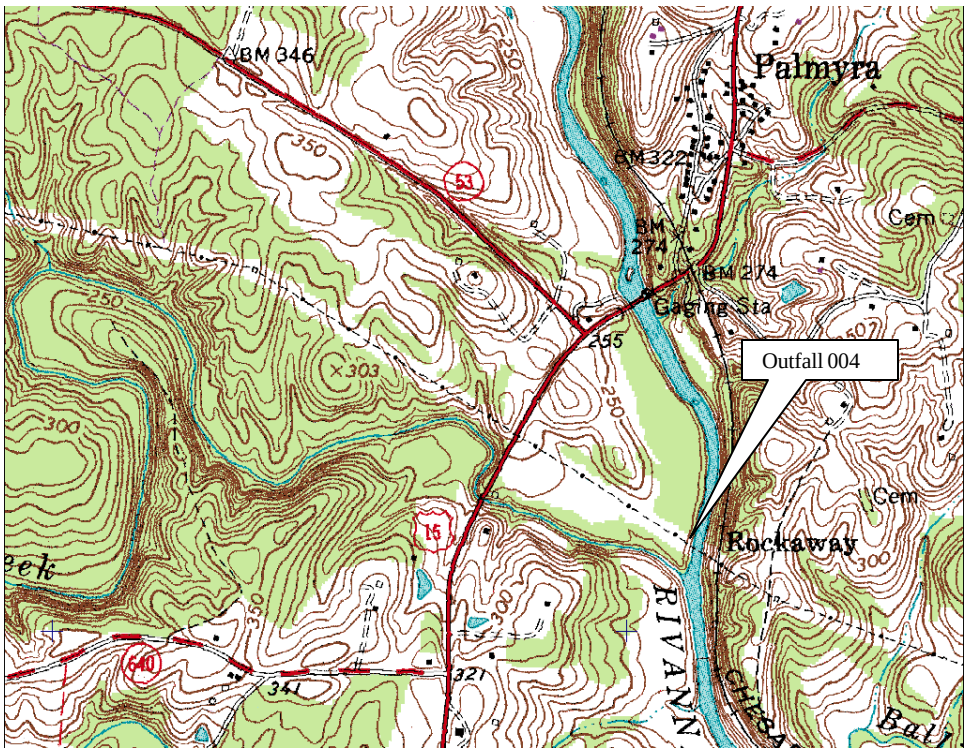
- Original Permit Issuance: May 13, 2002
- Commencement of Construction: Prior to January 2002
- Commencement of Discharge: January 2004
- 2007 Reissuance established Outfall 001 flow of 1.157 MGD
- Permit was modified in January 2010 to add Outfall 004

APPENDIX A

DISCHARGE LOCATION AND RECEIVING WATERS INFORMATION

Tenaska Virginia Generating Station discharges to the Middle Fork Cunningham Creek and to the Rivanna River in Fluvanna County. The topographical maps below show the location of the treatment facility and Outfalls 001, 002, 003, and 004.





PLANNING INFORMATION

Relevant points of interest within the watershed and in the vicinity of the discharge are shown on the Water Quality Assessment TMDL Review table below.

WATER QUALITY ASSESSMENTS REVIEW
MIDDLE JAMES RIVER BASIN
2/15/2012

IMPAIRED SEGMENTS

SEGMENT ID	STREAM	SEGMENT START	SEGMENT END	SEGMENT LENGTH	PARAMETER
H31R-03-BEN	X-trib to Boston Creek	1.74	0.00	1.74	Benthic
H31R-04-BEN	X-trib to Rivanna River	0.98	0.00	0.98	Benthic
H32R-01-BEN	Cunningham Creek Middle Fork	6.81	3.08	3.73	Benthic
H32R-02-BAC	Cunningham Creek Middle Fork	6.81	0.00	6.81	E-coli
H32R-02-BEN	Cunningham Creek Middle Fork	3.08	0.00	3.08	Benthic
H32R-03-BAC	X-trib to M F Cunningham Creek	3.6	0.00	3.6	E-coli
H32R-04-BEN	X-trib to North Fork Cunningham Creek	0.6	0.00	0.6	Benthic

PERMITS

PERMIT	FACILITY	STREAM	RIVER MILE	LAT	LONG	WBID
VA0090905	**Tenaska Virginia Generating Station**	**Cunningham Creek Middle F**	**2.61**	**375151**	**0782223**	**VAV-H32R**
VA0090905	**Tenaska Virginia Generating Station - 004**	**Rivanna River**	**15.55**	**375107**	**0781554**	**VAV-H32R**
VA0024945	Lake Monticello STP	Rivanna River	22.78	375454	0781747	VAV-H31R
VA0030767	Fluvanna County High School	Raccoon Creek X Trib	1.59	374933	0781637	VAV-H31R
VA0091146	Palmyra Area WWTP	Rivanna River	15.71	375114	0781552	VAV-H31R
VA0082228	Fluvanna Middle School	Rivanna River	12.57	374930	0781440	VAV-H31R
VA0091936	Kingsbridge STP	Able Creek UT	0.79	374853	781755	VAV-H31R

MONITORING STATIONS

STREAM	NAME	RIVER MILE	RECORD	LAT	LONG
Ballinger Creek	2-BAG002.25	2.25	7/2003	375111	0781422
Cunninghams Creek	2-CXB005.39	5.39	07/01/91	375131	0781947
NF Cunningham Creek	2-CFK004.34	4.34	7/13/77	375328	0782224
Rivanna River	2-RVN015.97	15.97	05/07/74	375126	0781600
Rivanna River	2-RVN022.61	22.61	4/3/03	375449	0781738
Rivanna River	2-RVN023.01	23.01	7/2003	375506	0781752
x-trib to Middle Cunningham Cr	2-XPA000.57	0.57	7/9/03	375115	0782259
Middle Fork Cunningham Creek	2-CNM004.16	4.16	38197.00	375145	0782336
Cunninghams Creek	2-CXB000.86	0.86			
Middle Fork Cunningham Creek	2-CNM001.75	1.75			
Middle Fork Cunningham Creek	2-CNM002.25	2.25		375204	0782155
Middle Fork Cunningham Creek	2-CNM003.82	3.82		375140	0782316
Raccoon Creek	2-RCC000.91	0.91			
Rivanna River	2-RVN012.05	12.05	8/29/01	374948	0781414
Rivanna River	2-RVN012.84	12.84			

PUBLIC WATER SUPPLY INTAKES

OWNER	STREAM	RIVER MILE
None		

WATER QUALITY MANAGEMENT PLANNING REGULATION

Is this discharge addressed in the WQMP regulation? **No**

If Yes, what effluent limitations or restrictions does the WQMP regulation impose on this discharge?

PARAMETER	ALLOCATION

WATERSHED NAME

VAV-H32R Cunningham Creek

FLOW FREQUENCY DETERMINATION

MEMORANDUM
DEPARTMENT OF ENVIRONMENTAL QUALITY
VALLEY REGIONAL OFFICE

4411 Early Road – P.O. Box 3000 **Harrisonburg, VA 22801**

SUBJECT: Flow Frequency Determination
Tenaska Virginia Generating Station – VPDES Permit No. VA0090905, Fluvanna County

TO: Permit Processing File

FROM: Jason R. Dameron

DATE: January 20, 2012

This memo supersedes the previous flow frequency determination for Middle Fork Cunningham Creek dated February 28, 2007 and the previous flow frequency determination for the Rivanna River dated June 15, 2009.

Tenaska discharges to the Middle Fork Cunningham Creek near Cunningham and to the Rivanna River near Palmyra, Virginia. Stream flow frequencies are required at these sites for use by the permit writer in developing effluent limitations for the VPDES permit reissuance.

The permittee has collected several flow measurements on the Middle Fork Cunningham Creek, located just upstream of the discharge point. The flow measurements were collected by MapTech, Inc., in accordance with accepted USGS standard methods. The site specific flow measurements were collected from 2005 to 2006. The site specific measurements correlated very well with the same day daily mean values from the continuous record gage on Fine Creek at Fine Creek, VA (#02036500). The measurements and daily mean values were plotted on a logarithmic graph and a best fit line was drawn though each set of data points. The required flow frequencies from the reference gage were plugged into each equation and the associated flow frequencies for the measurement site were calculated.

The flow frequencies from the reference gage and the discharge point are presented below. Since the measurement site and the discharge point are located in close proximity to each other, the flow values are assumed to be the same.

Fine Creek at Fine Creek Mills, VA (#02036500):

Drainage Area = 22.4 mi^2

1Q30 =	0.09 cfs	High Flow 1Q10 =	2.5 cfs
1Q10 =	0.24 cfs	High Flow 7Q10 =	3.1 cfs
7Q10 =	0.30 cfs	High Flow 30Q10 =	5.8 cfs
30Q10 =	0.53 cfs	Harmonic Mean =	3.7 cfs
30Q5 =	0.98 cfs		

Middle Fork Cunningham Creek at the discharge point (Outfall 001):

Drainage Area = 8.09 mi^2

1Q30 =	0.06 cfs	(0.039 MGD)	High Flow 1Q10 =	0.90 cfs	(0.58 MGD)
1Q10 =	0.13 cfs	(0.084 MGD)	High Flow 7Q10 =	1.08 cfs	(0.70 MGD)
7Q10 =	0.15 cfs	(0.097 MGD)	High Flow 30Q10 =	1.82 cfs	(1.18 MGD)
30Q10 =	0.25 cfs	(0.16 MGD)	Harmonic Mean =	1.25 cfs	(0.81 MGD)
30Q5 =	0.41cfs	(0.26 MGD)			

The USGS and VDEQ have operated a continuous record gage on the Rivanna River at Palmyra, VA (#02034000) since 1934. Flows at this gage have been regulated by reservoirs since 1967, and the flow frequencies for the gage have been determined using the regulated period of record. The gage is located at the U.S. Route 15 bridge, approximately 1000 feet upstream of the discharge point. Since there are no sizable tributaries to the Rivanna River between the gage and the outfall, and the intervening drainage area is negligible, the flow frequencies for the gage should be applied directly to the discharge point. The Palmyra Area WWTP discharges

to the Rivanna River between the gage and Outfall 004. The average discharge flow from the Palmyra Area WWTP over the past 12 months (0.0054 MGD) was added to the gage flows. The average discharge from the Palmyra Area WWTP is insignificant at this time and does not impact the flow values listed at the gage. The flow frequencies are presented below:

Rivanna River at the discharge point (Outfall 004):

Drainage Area = 663 mi^2

1Q30 =	13 cfs (8.40 MGD)	High Flow 1Q10 =	111 cfs (71.7 MGD)
1Q10 =	24 cfs (15.5 MGD)	High Flow 7Q10 =	133 cfs (86.0 MGD)
7Q10 =	28 cfs (18.1 MGD)	High Flow 30Q10 =	182 cfs (118 MGD)
30Q10 =	42 cfs (27.1 MGD)	HM =	226 cfs (146 MGD)
30Q5 =	62 cfs (40.1 MGD)		

The high flow months are December through May.

Reviewer: BWC
Date:01.20.12

NPDES PERMIT RATING WORK SHEET

[X] Regular Addition
[ ] Discretionary Addition
[ ] Score change, but no status change
[ ] Deletion

NPDES NO. **VA0090905**

Facility Name: **Tenaska Virginia Generating Station**

City: **Scottsville, VA**

Receiving Water: **Middle Fork Cunningham Creek, Rivanna River**

Reach Number:

Is this facility a steam electric power plant (SIC=4911) with one or more of the following characteristics?
1. Power output 500 MW or greater (not using a cooling pond/lake)
2. A nuclear power plant
3. Cooling water discharge greater than 25% of the receiving stream's 7Q10 flow rate
[X] YES; score is 600 (stop here) [ ] NO (continue)

Is this permit for a municipal separate storm sewer serving a population greater than 100,000?

[ ] YES; score is 700 (stop here)
[X] NO (continue)

SCORE SUMMARY

S1. Is the total score equal to or greater than 80? [X] Yes (Facility is a major) [ ] No

New Score: **600**
Old Score: **600**

Jason Dameron
Permit Reviewer's Name

540-574-7824
Phone Number

March 7, 2012
Date

EFFLUENT/STREAM MIXING EVALUATION

Mixing zone predictions were made with the Virginia DEQ Mixing Zone Analysis Version 2.1 program. The predictions are based on the discharge and receiving stream characteristics, and are presented below.

Outfall 001 - 1.25 MGD Annual Mix

Effluent Flow = 1.25 MGD
Stream 7Q10 = 0.097 MGD
Stream 30Q10 = 0.16 MGD
Stream 1Q10 = 0.084 MGD
Stream slope = 0.003 ft/ft
Stream width = 7.5 ft
Bottom scale = 3
Channel scale = 2

Mixing Zone Predictions @ 7Q10
Depth = .5882 ft
Length = 50.56 ft
Velocity = .4726 ft/sec
Residence Time = .0012 days
Recommendation: A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10
Depth = .6055 ft
Length = 49.22 ft
Velocity = .4806 ft/sec
Residence Time = .0012 days
Recommendation: A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10
Depth = .5846 ft
Length = 50.85 ft
Velocity = .471 ft/sec
Residence Time = .03 hours
Recommendation: A complete mix assumption is appropriate for this situation and the entire 1Q10 may be used.

Outfall 001 - 1.25 MGD Wet Season Mix

Effluent Flow = 1.25 MGD
Stream 7Q10 = 0.7 MGD
Stream 30Q10 = 1.18 MGD
Stream 1Q10 = 0.58 MGD
Stream slope = 0.003 ft/ft
Stream width = 9 ft
Bottom scale = 3
Channel scale = 2

Mixing Zone Predictions @ 7Q10
Depth = .6558 ft
Length = 66.93 ft
Velocity = .5114 ft/sec
Residence Time = .0015 days
Recommendation: A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10
Depth = .754 ft
Length = 58.84 ft
Velocity = .5543 ft/sec
Residence Time = .0012 days
Recommendation: A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10
Depth = .63 ft
Length = 69.44 ft
Velocity = .4996 ft/sec
Residence Time = .0386 hours
Recommendation: A complete mix assumption is appropriate for this situation and the entire 1Q10 may be used.

Outfall 004 - 1.73 MGD Annual Mix

Effluent Flow = 1.73 MGD
Stream 7Q10 = 18.1 MGD
Stream 30Q10 = 27.1 MGD
Stream 1Q10 = 15.5 MGD
Stream slope = 0.0005 ft/ft
Stream width = 90 ft
Bottom scale = 2
Channel scale = 1

Mixing Zone Predictions @ 7Q10
Depth = .894 ft
Length = 11522.93 ft
Velocity = .3815 ft/sec
Residence Time = .3496 days
Recommendation: A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10
Depth = 1.1214 ft
Length = 9509.12 ft
Velocity = .4422 ft/sec
Residence Time = .2489 days
Recommendation: A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10
Depth = .8213 ft
Length = 12380.72 ft
Velocity = .3609 ft/sec
Residence Time = 9.5304 hours
Recommendation: A complete mix assumption is appropriate for this situation providing no more than 10.49% of the 1Q10 is used.

APPENDIX B

EFFLUENT SCREENING AND EFFLUENT LIMITATIONS

EFFLUENT LIMITATIONS

A comparison of technology and water quality-based limits was performed and the most stringent limits were selected, as summarized in the table below.

Outfall 001 – Final Limits – Design Flow: 1.25 MGD

PARAMETER	BASIS FOR LIMITS	EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		Monthly Average	Maximum	Frequency	Sample Type
Flow	2	NL	NL	Continuous	TIRE
$cBOD_5$ (Jun – Nov)	1,3	8 mg/L	16 mg/L	1/Month	24 HC
		30 kg/d	70 kg/d		
$cBOD_5$ (Dec – May)	1,3	13 mg/L	26 mg/L	1/Month	24 HC
		57 kg/d	110 kg/d		
Chlorides (mg/L)	1	366	366	1/Month	24 HC
TRC (mg/L)	1,4	0.0087	0.018	1/Day	Grab
---	---	Minimum	Maximum	---	---
pH (S.U.)	1,4	6.0	9.0	1Day	Grab
Dissolved Oxygen (mg/L)	1,3	6.9	NA	1/Week	Grab
Temperature (°C)	1,3,4	NA	27	Continuous	Recording
Total Phosphorus	4	NL	NA	1/Month	Grab

NL = No Limitation, monitoring required NA = Not Applicable
TIRE = Totalizing, Indicating, and Recording Equipment 24 HC = 24 Hour Composite

Bases for Effluent Limitations

1. Water Quality Standards (9 VAC 25-260)
2. VPDES Permit Regulation (9 VAC 25-31)
3. Regional Stream Model
4. Cooling Water General Permit (9 VAC 25-196)

Outfall 101 – Final Limits – Low Volume Waste Sources

PARAMETER	BASIS FOR LIMITS	EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		Monthly Average	Maximum	Frequency	Sample Type
Flow	2	NL	NL	1 Month	Est.
TSS (mg/L)	3	30	100	1/Month	Grab
Oil and Grease (mg/L)	3	15	20	1/Month	Grab
---	---	Minimum	Maximum	---	---
pH (S.U.)	1	6.0	9.0	1/Month	Grab

NL = No Limitation, monitoring required NA = Not Applicable

Bases for Effluent Limitations

1. Water Quality Standards (9 VAC 25-260)
2. VPDES Permit Regulation (9 VAC 25-31)
3. New Source Performance Standards (NSPS) for Steam Electric Power Generating, Low Volume Waste Sources (40 CFR 423.15)

Outfall 201 – Final Limits – Cooling Tower Blowdown

PARAMETER	BASIS FOR LIMITS	EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		Monthly Average	Maximum	Frequency	Sample Type
Flow	2	NL	NL	1/Month	Est.
Free Available Chlorine (mg/L)	3	0.2	0.5	1/Month	Grab
Total Chromium (mg/L)	3	0.2	0.2	1/Month	Grab
Total Zinc (mg/L)	3	1.0	1.0	1/Month	Grab
The 126 priority pollutants contained in chemicals added for cooling tower maintenance except Total Chromium and Total Zinc	3	ND	ND	1/Month	Grab
---	---	Minimum	Maximum	---	---
pH (S.U.)	1	6.0	9.0	1/Month	Grab

NL = No Limitation, monitoring required NA = Not Applicable
ND = No detectable amount

Bases for Effluent Limitations
1. Water Quality Standards (9 VAC 25-260)
2. VPDES Permit Regulation (9 VAC 25-31)
3. New Source Performance Standards (NSPS) for Steam Electric Power Generating, Low Volume Waste Sources (40 CFR 423.15)

Outfall 002 and 003 – Final Limits – Storm Water

PARAMETER	BASIS FOR LIMITS	EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		Monthly Average	Maximum	Frequency	Sample Type
Total Recoverable Iron (mg/L)	1	NL	NL	1/Year	Grab

NL = No Limitation, monitoring required

Bases for Effluent Limitations
1. VPDES Permit Manual

Outfall 004 – Final Limits – Design Flow: 1.73 MGD

PARAMETER	BASIS FOR LIMITS	EFFLUENT LIMITATIONS		MONITORING REQUIREMENTS	
		Monthly Average	Maximum	Frequency	Sample Type
Flow (MGD)	2	NL	NL	Continuous	TIRE
TRC (mg/L)	1,3	0.018	0.037	1/Day	Grab
Chlorides (mg/L)	1	965	965	1/Month	24 HC
---	---	Minimum	Maximum	---	---
pH (S.U.)	1,3	6.0	9.0	1/Day	Grab
Temperature (°C)*	1,3	NA	32	Continuous	Recording
Total Phosphorus	3	NL	NA	1/Month	Grab

NL = No Limitation, monitoring required
NA = Not Applicable
TIRE = Totalizing, Indicating, and Recording equipment
24 HC = 24-Hour Composite

* The effluent shall not cause an increase in temperature of the receiving stream of more than 3°C above the natural water temperature. The effluent shall not cause the temperature in the receiving stream to change more than 2°C per hour. Natural temperature is defined as that temperature of a body of water (measured as the arithmetic average over one hour) due solely to natural conditions without the influence of any point-source discharge.

Bases for Effluent Limitations
1. Water Quality Standards (9 VAC 25-260)
2. VPDES Permit Regulation (9 VAC 25-31)
3. Cooling Water General Permit (9 VAC 25-196)

LIMITING FACTORS – OVERVIEW:
The following potential limiting factors have been considered in developing this permit and fact sheet:

Water Quality Management Plan Regulation (WQMP) (9 VAC 25-720)	
A. TMDL limits	**None**
B. Non-TMDL WLAs	**None**
C. CBP (TN & TP) WLAs	**None**
Federal Effluent Guidelines	**TSS, Oil & Grease, Free Available Chlorine, Total Chromium, Total Zinc**
BPJ/Agency Guidance limits	**None**
Water Quality-based Limits - numeric	**TRC, Temperature, pH, Chlorides, DO, $cBOD_5$**
Water Quality-based Limits - narrative	**Temperature**
Technology-based Limits (9 VAC 25-40-70)	**None**
Whole Effluent Toxicity (WET)	**See Appendix B**
Storm Water Limits	**Total Recoverable Iron**
Cooling Water General Permit (9 VAC 25-196-70)	**See discussion below**

The operations producing the wastewater and the treatment facilities serving both outfalls are the same, with the difference in design flows being due to the frequency and duration of the discharge to each. The permittee has the ability to operate the cooling tower at higher cycles resulting in less water usage and higher concentrations in the wastewater.

EVALUATION OF THE EFFLUENT – NUTRIENTS:
Total Phosphorus monitoring is required in accordance with the Cooling Water General Permit; however, no other nutrient monitoring and limits are currently required for this industrial facility.

EVALUATION OF THE EFFLUENT – CONVENTIONAL POLLUTANTS: OUTFALL 001
The majority of the flow discharged from Outfall 001 is non-contact cooling water, and any variation (increase or decrease) in flow at Outfall 001 is due mainly to non-contact cooling water, which is not expected to add any significant loading of pollutants. The General Permit for Cooling Water Discharges was used as a guide for evaluating the non-contact cooling water from this facility. $cBOD_5$, DO, and TKN are not parameters of concern with non-contact cooling water discharges; however, because $cBOD_5$ and DO limits were previously established for Outfall 001 and there is no new information that would result in less stringent limits, the previously established limits must be carried forward in order to comply with antibacksliding requirements.

The discharge from this facility was previously modeled using the Regional Stream Model (v.4.10). Since there has not been a significant change in the background stream or effluent data, the model has been carried forward at this reissuance and is still considered to be protective of WQS. The DO baseline for the Middle Fork Cunningham Creek was previously determined to be 6.9 mg/L, using data provided for Cunningham Creek. The baseline was determined by subtracting 0.2 mg/L from the background DO. Based on a current guidance, if current permit limits for DO controlling parameters and Ammonia-N are based on a Tier 2 evaluation, then future limits for DO controlling parameters and Ammonia-N should continue to be based upon a Tier 2 evaluation, even if the receiving stream is subsequently determined to be Tier 1 based on evaluation of other parameters. The limits below were demonstrated to maintain the DO baseline for Cunningham Creek. The modeling information is available for review at the DEQ-Valley Regional Office or electronically upon request.

$cBOD_5$ (Jun-Nov) =	8 mg/L
$cBOD_5$ (Dec-May) =	13 mg/L
DO =	6.9 mg/L
Temperature =	27°C
TKN =	0 mg/L

The $cBOD_5$ limits have been carried forward at this reissuance. Based on the data provided during the previous permit term, the monitoring frequency has been reduced from 1/Week to 1/Month at this reissuance.

The DO limit has been carried forward at this reissuance. Based on the data provided during the previous permit term, the monitoring frequency has been reduced from 1/Day to 1/Week at this reissuance.

TKN limits were determined to not be necessary because TKN is not a parameter of concern for this discharge.

The temperature limit, which is based on the Regional Stream Model, has been carried forward from the previous permit.

The pH limits reflect the current WQS for the Middle Fork Cunningham Creek and have been carried forward from the previous permit.

EVALUATION OF THE EFFLUENT – NON-CONTACT COOLING WATER: OUTFALL 001

The majority of the flow discharged from Outfall 001 is non-contact cooling water, and any variation (increase or decrease) in flow at Outfall 001 is due mainly to non-contact cooling water, which is not expected to add any significant loading of pollutants. The General Permit for Cooling Water Discharges was used as a guide for evaluating the non-contact cooling water from this facility and specifies monitoring for the following parameters.

Flow	Temperature
pH	Ammonia-N[1]
TRC[1]	Hardness
Total Dissolved Copper	Total Dissolved Zinc
Total Dissolved Silver[2]	Total Phosphorus[3]

(1) TRC and Ammonia-N monitoring only applies to outfalls directly discharging to surface waters where the source of cooling water is chlorinated or contains chloramines.
(2) Silver monitoring is only required where Cu/Ag anode is used.
(3) Phosphorus monitoring is only required where additive containing phosphorus is used.

According to the application, the source water and the cooling tower basin water are both treated with Sodium Hypochlorite, and additives containing phosphorus are used to treat the cooling tower and the boilers. Based on this information, monitoring is required for TRC and Total Phosphorus. The permittee also stated that copper/silver anodes are not used during the treatment process; therefore, Total Dissolved Silver monitoring is not required. Since chloramines are not used in the treatment process, Ammonia-N monitoring is not required.

Continuous flow monitoring is required.

Continuous monitoring for temperature is required. Also, in accordance with the General Permit, the following footnote was included in Part I.A.1. of the permit.

> "The effluent shall not cause an increase in temperature of the receiving stream of more than 3 °C above the natural water temperature. The effluent shall not cause the temperature in the receiving stream to change more than 2 °C per hour. Natural temperature is defined as that temperature of a body of water (measured as the arithmetic average over one hour) due solely to natural conditions without the influence of any point-source discharge."

Daily monitoring for pH is required. The pH limits reflect the current WQS for pH in the receiving stream.

EVALUATION OF THE EFFLUENT – TOXICS: OUTFALL 001

Stream: Water quality data for the receiving stream were obtained from Ambient Monitoring Station No. 2-CNM004.16 for the Middle Fork Cunningham Creek. Since hardness data were not available for the receiving stream, the worst case scenario was assumed.

Table 1. Stream Information

90%-tile Annual Temp (°C) =	27.5	90%-tile pH (SU) =	7.4
90%-tile Wet Temp (°C) =	17	10%-tile pH (SU) =	6.4
Mean Hardness (mg/L) =	25		

Discharge: The temperature and pH values were obtained from the Discharge Monitoring Reports (DMRs) submitted by the permittee. The mean hardness value was obtained from data submitted by the permittee.

Table 2. Discharge Information – Outfall 001

90%-tile Annual Temp (°C) =	29.8	90%-tile pH (SU) =	8.52
90%-tile Wet Temp (°C) =	13.4	10%-tile pH (SU) =	6.98
Mean Hardness (mg/L) =	664		

WQC and WLAs were calculated for the WQS parameters for which data are available. The resulting WQC and WLAs are presented in this appendix. The effluent data were analyzed per the protocol for evaluation of effluent toxic pollutants included in this appendix with the following results:

- TRC: Less stringent TRC limits have been included at this reissuance based on the Tier 1 classification. Because the Tier 1 classification would have justified less stringent limits when the previous limits were established, had that information been available, the less stringent TRC limits in this permit reissuance comply with the antibacksliding provisions of the VPDES Permit Regulation.

- Chlorides: Less stringent TRC limits have been included at this reissuance based on the Tier 1 classification. Because the Tier 1 classification would have justified less stringent limits when the previous limits were established, had that information been available, the less stringent TRC limits in this permit reissuance comply with the antibacksliding provisions of the VPDES Permit Regulation.

WQC-WLA SPREADSHEET INPUT – OUTFALL 001

WATER QUALITY CRITERIA / WASTE LOAD ALLOCATION ANALYSIS

Facility Name: Tenaska
Receiving Stream: Middle Fork Cunningham Creek
Permit No.: VA0090905
Date: 2/24/2012
Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information			Stream Flows			Mixing Information			Effluent Information		
Mean Hardness (as CaCO3) =	25	mg/L	1Q10 (Annual) =	0.084	MGD	Annual - 1Q10 Flow =	100	%	Mean Hardness (as CaCO3) =	664	mg/L
90% Temperature (Annual) =	27.5	deg C	7Q10 (Annual) =	0.097	MGD	- 7Q10 Flow =	100	%	90% Temp (Annual) =	29.8	deg C
90% Temperature (Wet season) =	17	deg C	30Q10 (Annual) =	0.16	MGD	- 30Q10 Flow =	100	%	90% Temp (Wet season) =	13.4	deg C
90% Maximum pH =	7.4	SU	1Q10 (Wet season) =	0.58	MGD	Wet Season - 1Q10 Flow =	100	%	90% Maximum pH =	8.52	SU
10% Maximum pH =	6.4	SU	30Q10 (Wet season) =	1.18	MGD	- 30Q10 Flow =	100	%	10% Maximum pH =	6.98	SU
Tier Designation =	1		30Q5 =	0.26	MGD				Current Discharge Flow =	1.250	MGD
Public Water Supply (PWS) Y/N? =	N		Harmonic Mean =	0.81	MGD				Discharge Flow for Limit Analysis =	1.250	MGD
V(alley) or P(iedmont)? =	P										
Trout Present Y/N? =	N										
Early Life Stages Present Y/N? =	Y										

Footnotes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise.
2. All flow values are expressed as Million Gallons per Day (MGD).
3. Discharge volumes are highest monthly average or 2C maximum for Industries and design flows for Municipals.
4. Hardness expressed as mg/l CaCO3. Standards calculated using Hardness values in the range of 25-400 mg/l CaCO3.
5. "Public Water Supply" protects for fish & water consumption. "Other Surface Waters" protects for fish consumption only.
6. Carcinogen "Y" indicates carcinogenic parameter.
7. Ammonia WQSs selected from separate tables, based on pH and temperature.
8. Metals measured as Dissolved, unless specified otherwise.
9. WLA = Waste Load Allocation (based on standards).
10. WLA = Waste Load Allocation (based on standards).
11. WLAs are based on mass balances (less background, if data exist).
12. Acute - 1 hour avg. concentration not to be exceeded more than 1/3 years.
13. Chronic - 4 day avg. concentration (30 day avg. for Ammonia) not to be exceeded more than 1/3 years.
14. Mass balances employ 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, and Harmonic Mean for Carcinogens. Actual flows employed are a function of the mixing analysis and may be less than the actual flows.
15. Effluent Limitations are calculated elsewhere using the minimum WLA and EPA's statistical approach (Technical Support Document).

WQC-WLA SPREADSHEET OUTPUT – OUTFALL 001

~~Facility Name:~~ Tenaska
~~Receiving Stream:~~ Middle Fork Cunningham Creek
Permit No.: VA0090905
~~Date:~~ 2/29/2012

WATER QUALITY CRITERIA
1.250 MGD Discharge Flow - Mix per "Mixer"

NON-ANTIDEGRADATION WASTE LOAD ALLOCATIONS
1.250 MGD Discharge - Mix per "Mixer"

		Aquatic Protection		Human Health		Aquatic Protection		
				Public Water	Other Surface			Human
Toxic Parameter and Form	Carcinogen?	Acute	Chronic	Supplies	Waters	Acute	Chronic	Health
Chloride	N	8.6E+02 mg/L	2.3E+02 mg/L	2.5E+02 mg/L	None	9.2E+02 mg/L	2.5E+02 mg/L	N/A
Chlorine, Total Residual	N	1.9E-02 mg/L	1.1E-02 mg/L	None	None	2.0E-02 mg/L	1.2E-02 mg/L	N/A
Chromium (+3)	N	1.8E+03	2.3E+02	None	None	1.9E+03	2.5E+02	N/A
Chromium (+6)	N	1.6E+01	1.1E+01	None	None	1.7E+01	1.2E+01	N/A
Copper	N	5.0E+01	2.9E+01	1.3E+03	None	5.3E+01	3.2E+01	N/A
Nickel	N	5.9E+02	6.5E+01	6.1E+02	4.6E+03	6.3E+02	7.1E+01	5.6E+03
Zinc	N	3.8E+02	3.8E+02	7.4E+03	2.6E+04	4.0E+02	4.1E+02	3.1E+04

EVALUATION OF THE EFFLUENT – CONVENTIONAL POLLUTANTS: OUTFALL 004

$cBOD_5$, DO, and TKN are not parameters of concern with non-contact cooling water discharges, as has been demonstrated by the data collected at Outfall 001. Based on this and the fact that Outfall 004 discharges to the Rivanna River which has a much larger assimilative capacity than Middle Fork Cunningham Creek, no limits for $cBOD_5$, DO, or TKN have been included at Outfall 004.

The pH limits reflect the current WQS for the Rivanna River and have been carried forward from the previous permit.

The temperature monitoring is consistent with the General Permit for Cooling Water Discharges, and has been carried forward from the previous permit.

EVALUATION OF THE EFFLUENT – NON-CONTACT COOLING WATER: OUTFALL 004

The majority of the flow discharged from Outfall 004 is non-contact cooling water, and any variation (increase or decrease) in flow at Outfall 004 is due mainly to non-contact cooling water, which is not expected to add any significant loading of pollutants. The General Permit for Cooling Water Discharges was used as a guide for evaluating the non-contact cooling water from this facility and specifies monitoring for the following parameters.

Flow	Temperature
pH	Ammonia-N[1]
TRC[1]	Hardness
Total Dissolved Copper	Total Dissolved Zinc
Total Dissolved Silver[2]	Total Phosphorus[3]

(1) Chlorine and Ammonia-N monitoring only applies to outfalls directly discharging to surface waters where the source of cooling water is chlorinated or contains chloramines.

(2) Silver monitoring is only required where Cu/Ag anode is used.

(3) Phosphorus monitoring is only required where additive containing phosphorus is used.

According to the application, the source water and the cooling tower basin water are both treated with Sodium Hypochlorite, and additives containing phosphorus are used to treat the cooling tower and the boilers. Based on this information, monitoring is required for TRC and Total Phosphorus. The permittee also stated that copper/silver anodes are not used during the treatment process; therefore, Total Dissolved Silver monitoring is not required. Since chloramines are not used in the treatment process, Ammonia-N monitoring is not required.

Continuous flow monitoring is required.

Continuous monitoring for temperature is required. The effluent temperature shall not exceed a maximum of 32 °C. Also, in accordance with the General Permit, the following footnote was included in Part I.A.1. of the permit.

> "The effluent shall not cause an increase in temperature of the receiving stream of more than 3 °C above the natural water temperature. The effluent shall not cause the temperature in the receiving stream to change more than 2 °C per hour. Natural temperature is defined as that temperature of a body of water (measured as the arithmetic average over one hour) due solely to natural conditions without the influence of any point-source discharge."

Daily monitoring for pH is required. The pH limits reflect the current WQS for pH in the receiving stream.

EVALUATION OF THE EFFLUENT – TOXICS: OUFALL 004

Stream: Water quality data for the receiving stream were obtained from Ambient Monitoring Station No. 2-RVN015.97 on the Rivanna River upstream of the Rte 15 bridge. Toxic substances, including Ammonia-N and TRC, are assumed absent in the receiving stream because there are no data to indicate their presence.

Table 1. Stream Information			
90%-tile Annual Temp (°C) =	25.46	90%-tile pH (SU) =	8.4
90%-tile Wet Temp (°C) =	NA	10%-tile pH (SU) =	7.0
Mean Hardness (mg/L) =	24.2		

Discharge: The temperature and pH values were obtained from the Discharge Monitoring Reports (DMRs) submitted by the permittee. The mean hardness value was obtained from data submitted by the permittee.

Table 2. Discharge Information – Outfall 001			
90%-tile Annual Temp (°C) =	29.8	90%-tile pH (SU) =	8.52
90%-tile Wet Temp (°C) =	13.4	10%-tile pH (SU) =	6.98
Mean Hardness (mg/L) =	664		

WQC and WLAs were calculated for the WQS parameters for which data are available. The resulting WQC and WLAs are presented in this appendix. The effluent data were analyzed per the protocol for evaluation of effluent toxic pollutants included in this appendix with the following results:

- TRC: The TRC limits have been carried forward from the previous permit.
- Chlorides: The chlorides limits have been carried forward from the previous permit.
- Additional monitoring data is needed for a number of pollutants due to the lack of effluent quality data. The permittee must monitor the effluent at Outfall 004 for the substances noted in Appendix C of the permit once within one year of the effective date of the permit.

WQC-WLA SPREADSHEET INPUT – Rivanna River

WATER QUALITY CRITERIA / WASTE LOAD ALLOCATION ANALYSIS

Facility Name: Tenaska
Receiving Stream: Rivanna River
Permit No.: VA0090905
Date: 2/29/2012
Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information		Stream Flows		Mixing Information			Effluent Information	
Mean Hardness (as CaCO3) =	24.2 mg/L	1Q10 (Annual) =	15.5 MGD	Annual	- 1Q10 Flow =	10.49 %	Mean Hardness (as CaCO3) =	664 mg/L
90% Temperature (Annual) =	25.46 deg C	7Q10 (Annual) =	18.1 MGD		- 7Q10 Flow =	100 %	90% Temp (Annual) =	29.8 deg C
90% Temperature (Wet season) =	deg C	30Q10 (Annual) =	27.1 MGD		- 30Q10 Flow =	100 %	90% Temp (Wet season) =	13.4 deg C
90% Maximum pH =	8.4 SU	1Q10 (Wet season) =	MGD	Wet Season	- 1Q10 Flow =	%	90% Maximum pH =	8.52 SU
10% Maximum pH =	7 SU	30Q10 (Wet season) =	MGD		- 30Q10 Flow =	%	10% Maximum pH =	6.98 SU
Tier Designation =	2	30Q5 =	40.1 MGD				1992 Discharge Flow =	0.000 MGD
Public Water Supply (PWS) Y/N? =	N	Harmonic Mean =	146 MGD				Discharge Flow for Limit Analysis =	1.730 MGD
V(alley) or P(iedmont)? =	P							
Trout Present Y/N? =	N							
Early Life Stages Present Y/N? =	Y							

Footnotes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise.
2. All flow values are expressed as Million Gallons per Day (MGD).
3. Discharge volumes are highest monthly average or 2C maximum for Industries and design flows for Municipals.
4. Hardness expressed as mg/l CaCO3. Standards calculated using Hardness values in the range of 25-400 mg/l CaCO3.
5. "Public Water Supply" protects for fish & water consumption. "Other Surface Waters" protects for fish consumption only.
6. Carcinogen "Y" indicates carcinogenic parameter.
7. Ammonia WQSs selected from separate tables, based on pH and temperature.
8. Metals measured as Dissolved, unless specified otherwise.
9. WLA = Waste Load Allocation (based on standards).
10. WLA = Waste Load Allocation (based on standards).
11. WLAs are based on mass balances (less background, if data exist).
12. Acute - 1 hour avg. concentration not to be exceeded more than 1/3 years.
13. Chronic - 4 day avg. concentration (30 day avg. for Ammonia) not to be exceeded more than 1/3 years.
14. Mass balances employ 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, and Harmonic Mean for Carcinogens. Actual flows employed are a function of the mixing analysis and may be less than the actual flows.
15. Effluent Limitations are calculated elsewhere using the minimum WLA and EPA's statistical approach (Technical Support Document).

WQC-WLA SPREADSHEET OUTPUT – Rivanna River

~~Facility Name:~~ Tenaska
Receiving Stream: Rivanna River
Permit No.: VA0090905
Date: 2/29/2012

PRE - DISCHARGE WATER QUALITY CRITERIA
0.000 MGD Discharge Flow - 100% Stream Mix

INSTREAM BASELINES

ANTIDEGRADATION WASTE LOAD ALLOCATIONS
1.730 MGD Discharge - 100% Stream Mix

Toxic Parameter and Form	Carcinogen?	Aquatic Protection Acute	Aquatic Protection Chronic	Human Health Public Water Supplies	Human Health Other Surface Waters	Instream Acute	Instream Chronic	Instream H-Health	Aquatic Protection Acute	Aquatic Protection Chronic	Human Health
Antimony	N	None	None	5.6E+00	6.4E+02	None	None	6.4E+01	N/A	N/A	1.5E+03
Arsenic	N	3.4E+02	1.5E+02	1.0E+01	None	8.5E+01	3.8E+01	None	8.5E+02	4.3E+02	N/A
Cadmium	N	8.2E-01	3.8E-01	5.0E+00	None	2.1E-01	9.5E-02	None	2.0E+00	1.1E+00	N/A
Chloride	N	8.6E+02 mg/L	2.3E+02 mg/L	2.5E+02 mg/L	None	2.2E+02 mg/L	5.8E+01 mg/L	None	2.1E+03 mg/L	6.6E+02 mg/L	N/A
Chlorine, Total Residual	N	1.9E-02 mg/L	1.1E-02 mg/L	None	None	4.8E-03 mg/L	2.8E-03 mg/L	None	4.7E-02 mg/L	3.2E-02 mg/L	N/A
Chromium (+3)	N	1.8E+02	2.4E+01	None	None	4.6E+01	6.0E+00	None	4.6E+02	6.8E+01	N/A
Chromium (+6)	N	1.6E+01	1.1E+01	None	None	4.0E+00	2.8E+00	None	4.0E+01	3.2E+01	N/A
Copper	N	3.6E+00	2.7E+00	1.3E+03	None	9.1E-01	6.8E-01	None	9.1E+00	7.8E+00	N/A
Lead	N	2.0E+01	2.3E+00	1.5E+01	None	5.1E+00	5.8E-01	None	5.1E+01	6.6E+00	N/A
Mercury	N	1.4E+00	7.7E-01	None	None	3.5E-01	1.9E-01	None	3.5E+00	2.2E+00	N/A
Nickel	N	5.6E+01	6.3E+00	6.1E+02	4.6E+03	1.4E+01	1.6E+00	4.6E+02	1.4E+02	1.8E+01	1.1E+04
Selenium, Total Recoverable	N	2.0E+01	5.0E+00	1.7E+02	4.2E+03	5.0E+00	1.3E+00	4.2E+02	5.0E+01	1.4E+01	1.0E+04
Silver	N	3.2E-01	None	None	None	7.9E-02	None	None	7.9E-01	N/A	N/A
Zinc	N	3.6E+01	3.6E+01	7.4E+03	2.6E+04	9.1E+00	9.1E+00	2.6E+03	9.0E+01	1.0E+02	6.3E+04

Facility Name: Tenaska
~~Permit No.:~~ VA0090905
~~Receiving Stream:~~ Rivanna River
~~Date:~~ 2/29/2012

POST - DISCHARGE WATER QUALITY CRITERIA
1.730 MGD Discharge Flow - Mix per "Mixer"

NON-ANTIDEGRADATION WASTE LOAD ALLOCATIONS
1.730 MGD Discharge - Mix per "Mixer"

MOST RESTRICTIVE WASTE LOAD ALLOCATIONS
1.730 MGD Discharge Flow

Toxic Parameter and Form	Carcinogen?	Aquatic Protection Acute	Aquatic Protection Chronic	Human Health Public Water Supplies	Human Health Other Surface Waters	Non-Antidegradation Aquatic Protection Acute	Non-Antidegradation Aquatic Protection Chronic	Non-Antidegradation Human Health	Most Restrictive Aquatic Protection Acute	Most Restrictive Aquatic Protection Chronic	Most Restrictive Human Health
Antimony	N	None	None	5.6E+00	6.4E+02	N/A	N/A	1.5E+04	N/A	N/A	1.5E+03
Arsenic	N	3.4E+02	1.5E+02	1.0E+01	None	6.6E+02	1.7E+03	N/A	6.6E+02	4.3E+02	N/A
Cadmium	N	1.6E+01	9.5E-01	5.0E+00	None	3.2E+01	1.1E+01	N/A	2.0E+00	1.1E+00	N/A
Chloride	N	8.6E+02 mg/L	2.3E+02 mg/L	2.5E+02 mg/L	None	1.7E+03 mg/L	2.6E+03 mg/L	N/A	1.7E+03 mg/L	6.6E+02 mg/L	N/A
Chlorine, Total Residual	N	1.9E-02 mg/L	1.1E-02 mg/L	None	None	3.7E-02 mg/L	1.3E-01 mg/L	N/A	3.7E-02 mg/L	3.2E-02 mg/L	N/A
Chromium (+3)	N	1.6E+03	6.2E+01	None	None	3.1E+03	7.1E+02	N/A	4.6E+02	6.8E+01	N/A
Chromium (+6)	N	1.6E+01	1.1E+01	None	None	3.1E+01	1.3E+02	N/A	3.1E+01	3.2E+01	N/A
Copper	N	4.4E+01	7.4E+00	1.3E+03	None	8.6E+01	8.5E+01	N/A	9.1E+00	7.8E+00	N/A
Lead	N	5.9E+02	1.0E+01	1.5E+01	None	1.2E+03	1.2E+02	N/A	5.1E+01	6.6E+00	N/A
Mercury	N	1.4E+00	7.7E-01	None	None	2.7E+00	8.8E+00	N/A	2.7E+00	2.2E+00	N/A
Nickel	N	5.3E+02	1.7E+01	6.1E+02	4.6E+03	1.0E+03	1.9E+02	1.1E+05	1.4E+02	1.8E+01	1.1E+04
Selenium, Total Recoverable	N	2.0E+01	5.0E+00	1.7E+02	4.2E+03	3.9E+01	5.7E+01	1.0E+05	3.9E+01	1.4E+01	1.0E+04
Silver	N	3.0E+01	None	None	None	5.9E+01	N/A	N/A	7.9E-01	N/A	N/A
Zinc	N	3.4E+02	9.8E+01	7.4E+03	2.6E+04	6.6E+02	1.1E+03	6.3E+05	9.0E+01	1.0E+02	6.3E+04

PROTOCOL FOR THE EVALUATION OF THE EFFLUENT – TOXIC POLLUTANTS

Toxic pollutants were evaluated in accordance with OWP Guidance Memo No. 00-2011. Acute and Chronic WLAs (WLA_a and WLA_c) were analyzed according to the protocol below using a statistical approach (STAT.exe) to determine the necessity and magnitude of limits. Human Health WLAs (WLA_{hh}) were analyzed according to the same protocol through a simple comparison with the effluent data. If the WLA_{hh} exceeded the effluent datum or data mean, no limits were required. If the effluent datum or data mean exceeded the WLA_{hh}, the WLA_{hh} was imposed as the limit. Since there are no data available immediately upstream of this discharge, all other upstream (background) pollutant concentrations are assumed to be "0".

The steps used in evaluating the effluent data are as follows:

A. If all data are reported as "below detection" or < the required Quantification Level (QL), and at least one detection level is = the required QL, then the pollutant is considered to be not significantly present in the discharge and no further monitoring is required.

B. If all data are reported as "below detection", and all detection levels are > the required QL, then an evaluation is performed in which the pollutant is assumed present at the lowest reported detection level.

B.1. If the evaluation indicates that no limits are needed, then the existing data set is adequate and no further monitoring is required.

B.2. If the evaluation indicates that limits are needed, then the existing data set is inadequate to make a determination and additional monitoring is required.

C. If any data value is reported as detectable at or above the required QL, then the data are adequate to determine whether effluent limits are needed.

C.1. If the evaluation indicates that no limits are needed, then no further monitoring is required.

C.2. If the evaluation indicates that limits are needed, then the limits and associated requirements are specified in the draft permit.

C.3. If the evaluation indicates that limits are needed, but the metals data are reported as a form other than "Dissolved", then the existing data set is inadequate to make a determination and additional monitoring is required.

TOXLARGE – OUTFALL 001

Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
METALS					
Antimony, dissolved	7440-36-0	0.2	Previously evaluated, no monitoring required.	---	---
Arsenic, dissolved	7440-38-2	1.0	Previously evaluated, no monitoring required.	---	---
Barium, dissolved	7440-39-3	---	Applicable to PWS waters only	---	---
Cadmium, dissolved	7440-43-9	0.3	<0.10	a	A
Chromium III, dissolved	16065-83-1	0.5	<3.24	a	B.1.
Chromium VI, dissolved	18540-29-9	0.5	<5, <10	a,f	B.1.
Chromium, Total	7440-47-3	---	Applicable to PWS waters only	---	---
Copper, dissolved	7440-50-8	0.5	2.62	a	C.1.
Iron, dissolved	7439-89-6	1.0	Applicable to PWS waters only	---	---
Lead, dissolved	7439-92-1	0.5	0.136	a	A
Manganese, dissolved	7439-96-5	0.2	Applicable to PWS waters only	---	---
Mercury, dissolved	7439-97-6	1.0	Previously evaluated, no monitoring required.	---	---
Nickel, dissolved	7440-02-0	0.5	3.17	a	C.1.
Selenium, total recoverable	7782-49-2	2.0	<1.0	a	A
Silver, dissolved	7440-22-4	0.2	<0.10	a	A
Thallium, dissolved	7440-28-0	---	<0.10	a	A
Zinc, dissolved	7440-66-6	2.0	3.94	a	C.1.
PESTICIDES/PCBS					
Aldrin [C]	309-00-2	0.05	Previously evaluated, no monitoring required.	---	---
Chlordane [C]	57-74-9	0.2	Previously evaluated, no monitoring required.	---	---
Chlorpyrifos	2921-88-2	---	Previously evaluated, no monitoring required.	---	---
DDD [C]	72-54-8	0.1	Previously evaluated, no monitoring required.	---	---
DDE [C]	72-55-9	0.1	Previously evaluated, no monitoring required.	---	---
DDT [C]	50-29-3	0.1	Previously evaluated, no monitoring required.	---	---
Demeton	8065-48-3	---	Previously evaluated, no monitoring required.	---	---
Diazinon	333-41-5	---	New requirement. Monitoring required in permit.	---	---
2,4-Dichlorophenoxy acetic acid (synonym = 2,4-D)	94-75-7	---	Applicable to PWS waters only	---	---
Dieldrin [C]	60-57-1	0.1	Previously evaluated, no monitoring required.	---	---
Alpha-Endosulfan	959-98-8	0.1	Previously evaluated, no monitoring required.	---	---
Beta-Endosulfan	33213-65-9	0.1	Previously evaluated, no monitoring required.	---	---
Alpha-Endosulfan + Beta-Endosulfan		---	Previously evaluated, no monitoring required.	---	---
Endosulfan Sulfate	1031-07-8	0.1	Previously evaluated, no monitoring required.	---	---
Endrin	72-20-8	0.1	Previously evaluated, no monitoring required.	---	---
Endrin Aldehyde	7421-93-4	---	<0.50	a	A
Guthion	86-50-0	---	Previously evaluated, no monitoring required.	---	---
Heptachlor [C]	76-44-8	0.05	Previously evaluated, no monitoring required.	---	---
Heptachlor Epoxide [C]	1024-57-3	---	<0.50	a	A
Hexachlorocyclohexane Alpha-BHC [C]	319-84-6	---	<0.50	a	A
Hexachlorocyclohexane Beta-BHC [C]	319-85-7	---	<0.50	a	A

Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
Hexachlorocyclohexane Gamma-BHC (synonym = Lindane)	58-89-9	---	Previously evaluated, no monitoring required.	---	---
Kepone	143-50-0	---	Previously evaluated, no monitoring required.	---	---
Malathion	121-75-5	---	Previously evaluated, no monitoring required.	---	---
Methoxychlor	72-43-5	---	Previously evaluated, no monitoring required.	---	---
Mirex	2385-85-5	---	Previously evaluated, no monitoring required.	---	---
Parathion	56-38-2	---	Previously evaluated, no monitoring required.	---	---
PCB Total [C]	1336-36-3	7.0	<5.0	a	A
Toxaphene [C]	8001-35-2	5.0	Previously evaluated, no monitoring required.	---	---
2-(2,4,5-Trichlorophenoxy) propionic acid (synonym = Silvex)	93-72-1	---	Applicable to PWS waters only	---	---
Tributyltin	60-10-5	---	Previously evaluated, no monitoring required.	---	---
BASE NEUTRAL EXTRACTABLES					
Acenaphthene	83-32-9	10.0	Previously evaluated, no monitoring required.	---	---
Anthracene	120-12-7	10.0	Previously evaluated, no monitoring required.	---	---
Benzidine [C]	92-87-5	---	<20	a	A
Benzo (a) anthracene [C]	56-55-3	10.0	Previously evaluated, no monitoring required.	---	---
Benzo (b) fluoranthene [C]	205-99-2	10.0	Previously evaluated, no monitoring required.	---	---
Benzo (k) fluoranthene [C]	207-08-9	10.0	Previously evaluated, no monitoring required.	---	---
Benzo (a) pyrene [C]	50-32-8	10.0	Previously evaluated, no monitoring required.	---	---
Bis 2-Chloroethyl Ether [C]	111-44-4	---	<10	a	A
Bis 2-Chloroisopropyl Ether	108-60-1	---	<10	a	A
Bis-2-Ethylhexyl Phthalate [C]	117-81-7	10.0	Previously evaluated, no monitoring required.	---	---
Butyl benzyl phthalate	85-68-7	10.0	Previously evaluated, no monitoring required.	---	---
2-Chloronaphthalene	91-58-7	---	<10	a	A
Chrysene [C]	218-01-9	10.0	Previously evaluated, no monitoring required.	---	---
Dibenz(a,h)anthracene [C]	53-70-3	20.0	Previously evaluated, no monitoring required.	---	---
1,2-Dichlorobenzene	95-50-1	10.0	Previously evaluated, no monitoring required.	---	---
1,3-Dichlorobenzene	541-73-1	10.0	Previously evaluated, no monitoring required.	---	---
1,4-Dichlorobenzene	106-46-7	10.0	Previously evaluated, no monitoring required.	---	---
3,3-Dichlorobenzidine [C]	91-94-1	---	<20	a	A
Diethyl phthalate	84-66-2	10.0	Previously evaluated, no monitoring required.	---	---
Dimethyl phthalate	131-11-3	---	<10	a	A
Di-n-Butyl Phthalate	84-74-2	10.0	Previously evaluated, no monitoring required.	---	---
2,4-Dinitrotoluene	121-14-2	10.0	Previously evaluated, no monitoring required.	---	---
1,2-Diphenylhydrazine [C]	122-66-7	---	<10	a	A
Fluoranthene	206-44-0	10.0	Previously evaluated, no monitoring required.	---	---
Fluorene	86-73-7	10.0	Previously evaluated, no monitoring required.	---	---
Hexachlorobenzene [C]	118-74-1	---	<10	a	A
Hexachlorobutadiene [C]	87-68-3	---	<10	a	A
Hexachlorocyclopentadiene	77-47-4	---	<10	a	A
Hexachloroethane [C]	67-72-1	---	<10	a	A
Indeno(1,2,3-cd)pyrene [C]	193-39-5	20.0	Previously evaluated, no monitoring required.	---	---
Isophorone [C]	78-59-1	10.0	Previously evaluated, no monitoring required.	---	---
Nitrobenzene	98-95-3	10.0	Previously evaluated, no monitoring required.	---	---

Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
N-Nitrosodimethylamine [C]	62-75-9	---	<10	a	A
N-Nitrosodi-n-propylamine [C]	621-64-7	---	<10	a	A
N-Nitrosodiphenylamine [C]	86-30-6	---	<10	a	A
Pyrene	129-00-0	10.0	Previously evaluated, no monitoring required.	---	---
1,2,4-Trichlorobenzene	120-82-1	10.0	Previously evaluated, no monitoring required.	---	---
VOLATILES					
Acrolein	107-02-8	---	<50	a	A
Acrylonitrile [C]	107-13-1	---	<50	a	A
Benzene [C]	71-43-2	10.0	Previously evaluated, no monitoring required.	---	---
Bromoform [C]	75-25-2	10.0	Previously evaluated, no monitoring required.	---	---
Carbon Tetrachloride [C]	56-23-5	10.0	Previously evaluated, no monitoring required.	---	---
Chlorobenzene	108-90-7	50.0	Previously evaluated, no monitoring required.	---	---
Chlorodibromomethane [C]	124-48-1	10.0	Previously evaluated, no monitoring required.	---	---
Chloroform	67-66-3	10.0	Previously evaluated, no monitoring required.	---	---
Dichlorobromomethane [C]	75-27-4	10.0	Previously evaluated, no monitoring required.	---	---
1,2-Dichloroethane [C]	107-06-2	10.0	Previously evaluated, no monitoring required.	---	---
1,1-Dichloroethylene	75-35-4	10.0	Previously evaluated, no monitoring required.	---	---
1,2-trans-dichloroethylene	156-60-5	---	<5.0	a	A
1,2-Dichloropropane [C]	78-87-5	---	<5.0	a	A
1,3-Dichloropropene [C]	542-75-6	---	<5.0	a	A
Ethylbenzene	100-41-4	10.0	Previously evaluated, no monitoring required.	---	---
Methyl Bromide	74-83-9	---	<10	a	A
Methylene Chloride [C]	75-09-2	20.0	Previously evaluated, no monitoring required.	---	---
1,1,2,2-Tetrachloroethane [C]	79-34-5	---	<5.0	a	A
Tetrachloroethylene	127-18-4	10.0	Previously evaluated, no monitoring required.	---	---
Toluene	10-88-3	10.0	Previously evaluated, no monitoring required.	---	---
1,1,2-Trichloroethane [C]	79-00-5	---	<5.0	a	A
Trichloroethylene [C]	79-01-6	10.0	Previously evaluated, no monitoring required.	---	---
Vinyl Chloride [C]	75-01-4	10.0	Previously evaluated, no monitoring required.	---	---
RADIONUCLIDES					
Beta Particle & Photon Activity (mrem/yr)	N/A	---	Applicable to PWS waters only	---	---
Combined Radium 226 and 228 (pCi/L)	N/A	---	Applicable to PWS waters only	---	---
Gross Alpha Particle Activity (pCi/L)	N/A	---	Applicable to PWS waters only	---	---
Uranium	N/A	---	Applicable to PWS waters only	---	---
ACID EXTRACTABLES					
2-Chlorophenol	95-57-8	10.0	Previously evaluated, no monitoring required.	---	---
2,4-Dichlorophenol	120-83-2	10.0	Previously evaluated, no monitoring required.	---	---
2,4-Dimethylphenol	105-67-9	10.0	Previously evaluated, no monitoring required.	---	---
2,4-Dinitrophenol	51-28-5	---	<50	a	A
2-Methyl-4,6-Dinitrophenol	534-52-1	---	Previously evaluated, no monitoring required.	---	---
Nonylphenol	104-40-51	---	New requirement. Monitoring required in permit.	---	---
Pentachlorophenol [C]	87-86-5	50.0	Previously evaluated, no monitoring required.	---	---
Phenol	108-95-2	10.0	Previously evaluated, no monitoring required.	---	---

Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
2,4,6-Trichlorophenol[C]	88-06-2	10.0	Previously evaluated, no monitoring required.	---	---
MISCELLANEOUS					
Ammonia-N (mg/L) (Jun-Dec)	766-41-7	0.2 mg/L	Previously evaluated, no monitoring required.	---	---
Ammonia-N (mg/L) (Jan-May)	766-41-7	0.2 mg/L	Not applicable	---	---
Chloride (mg/L)	16887-00-6	---	151	b	C.2.
TRC (mg/L)	7782-50-5	0.1 mg/L	Default = 20 mg/L	d	C.2.
Cyanide, Free	57-12-5	10.0	Previously evaluated, no monitoring required.	---	---
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin)	1746-01-6	0.01	Applicable to Paper Mills & Oil Refineries only	---	---
Foaming Agents (as MBAS)	N/A	---	Applicable to PWS waters only	---	---
Hydrogen Sulfide	7783-06-4	---	Previously evaluated, no monitoring required.	---	---
Nitrate as N (mg/L)	14797-55-8	---	Applicable to PWS waters only	---	---
Sulfate (mg/L)	N/A	---	Applicable to PWS waters only	---	---
Total Dissolved Solids (mg/L)	N/A	---	Applicable to PWS waters only	---	---
Hardness (mg/L as $CaCO_3$)	471-34-1	---	142, 188, 205	a	N/A

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Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
METALS					
Antimony, dissolved	7440-36-0	0.2	<100	c	A
Arsenic, dissolved	7440-38-2	1.0	<10	c	C.1.
Barium, dissolved	7440-39-3	---	Applicable to PWS waters only	---	---
Cadmium, dissolved	7440-43-9	0.3	<0.3	c	A
Chromium III, dissolved	16065-83-1	0.5	<10	c	B.1.
Chromium VI, dissolved	18540-29-9	0.5	13, <5	c,e	C.1.
Chromium, Total	7440-47-3	---	Applicable to PWS waters only	---	---
Copper, dissolved	7440-50-8	0.5	3.2	c	C.1.
Iron, dissolved	7439-89-6	1.0	Applicable to PWS waters only	---	---
Lead, dissolved	7439-92-1	0.5	<2	c	B.1.
Manganese, dissolved	7439-96-5	0.2	Applicable to PWS waters only	---	---
Mercury, dissolved	7439-97-6	1.0	<0.2	c	A
Nickel, dissolved	7440-02-0	0.5	<10	c	B.1.
Selenium, total recoverable	7782-49-2	2.0	<3	c	B.1.
Silver, dissolved	7440-22-4	0.2	<0.3	c	B.1.
Thallium, dissolved	7440-28-0	---	<2	c	A
Zinc, dissolved	7440-66-6	2.0	<10	c	B.1.
PESTICIDES/PCBS					
Aldrin [C]	309-00-2	0.05	<0.05	c	A
Chlordane [C]	57-74-9	0.2	<0.2	c	A
Chlorpyrifos	2921-88-2	---	<0.11	c	A
DDD [C]	72-54-8	0.1	<0.1	c	A
DDE [C]	72-55-9	0.1	<0.1	c	A
DDT [C]	50-29-3	0.1	<0.1	c	A

Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
Demeton	8065-48-3	---	<0.15	C	A
Diazinon	333-41-5	---	Monitoring required in the permit.		
2,4-Dichlorophenoxy acetic acid (synonym = 2,4-D)	94-75-7	---	Applicable to PWS waters only	---	---
Dieldrin C	60-57-1	0.1	<0.1	C	A
Alpha-Endosulfan	959-98-8	0.1	<0.1	C	A
Beta-Endosulfan	33213-65-9	0.1	<0.1	C	A
Alpha-Endosulfan + Beta-Endosulfan		---	<0.1	c	A
Endosulfan Sulfate	1031-07-8	0.1	<0.1	C	A
Endrin	72-20-8	0.1	<0.1	C	A
Endrin Aldehyde	7421-93-4	---	<0.2	C	A
Guthion	86-50-0	---	<0.33	C	A
Heptachlor C	76-44-8	0.05	<0.05	C	A
Heptachlor Epoxide C	1024-57-3	---	<0.2	C	A
Hexachlorocyclohexane Alpha-BHC C	319-84-6	---	<0.01	C	A
Hexachlorocyclohexane Beta-BHC C	319-85-7	---	<0.01	C	A
Hexachlorocyclohexane Gamma-BHC (synonym = Lindane)	58-89-9	---	<0.02	C	A
Kepone	143-50-0	---	<20	C	A
Malathion	121-75-5	---	<0.092	C	A
Methoxychlor	72-43-5	---	<2	C	A
Mirex	2385-85-5	---	<0.1	C	A
Parathion	56-38-2	---	<0.08	C	A
PCB Total C	1336-36-3	7.0	<7.0	C	A
Toxaphene C	8001-35-2	5.0	<5.0	C	A
2-(2,4,5-Trichlorophenoxy) propionic acid (synonym = Silvex)	93-72-1	---	Applicable to PWS waters only	---	---
Tributyltin	60-10-5	---	<0.03	c	A
Acenaphthene	83-32-9	10.0	<10	C	A
Anthracene	120-12-7	10.0	<10	C	A
Benzidine C	92-87-5	---	<50	C	A
Benzo (a) anthracene C	56-55-3	10.0	<10	C	A
Benzo (b) fluoranthene C	205-99-2	10.0	<10	C	A
Benzo (k) fluoranthene C	207-08-9	10.0	<10	C	A
Benzo (a) pyrene C	50-32-8	10.0	<10	C	A
Bis 2-Chloroethyl Ether C	111-44-4	---	<10	C	A
Bis 2-Chloroisopropyl Ether	108-60-1	---	<10	C	A
Bis-2-Ethylhexyl Phthalate C	117-81-7	10.0	<10	C	A
Butyl benzyl phthalate	85-68-7	10.0	<10	C	A
2-Chloronaphthalene	91-58-7	---	<10	C	A
Chrysene C	218-01-9	10.0	<10	C	A
Dibenz(a,h)anthracene C	53-70-3	20.0	<20	C	A
1,2-Dichlorobenzene	95-50-1	10.0	<10	C	A
1,3-Dichlorobenzene	541-73-1	10.0	<10	C	A

Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
1,4-Dichlorobenzene	106-46-7	10.0	<10	C	A
3,3-Dichlorobenzidine C	91-94-1	---	<10	C	A
Diethyl phthalate	84-66-2	10.0	<10	C	A
Dimethyl phthalate	131-11-3	---	<10	C	A
Di-n-Butyl Phthalate	84-74-2	10.0	<10	C	A
2,4-Dinitrotoluene	121-14-2	10.0	<10	C	A
1,2-Diphenylhydrazine C	122-66-7	---	<10	C	A
Fluoranthene	206-44-0	10.0	<10	C	A
Fluorene	86-73-7	10.0	<10	C	A
Hexachlorobenzene C	118-74-1	---	<10	C	A
Hexachlorobutadiene C	87-68-3	---	<10	C	A
Hexachlorocyclopentadiene	77-47-4	---	<10	C	A
Hexachloroethane C	67-72-1	---	<10	C	A
Indeno(1,2,3-cd)pyrene C	193-39-5	20.0	<20	C	A
Isophorone C	78-59-1	10.0	<10	C	A
Nitrobenzene	98-95-3	10.0	<10	C	A
N-Nitrosodimethylamine C	62-75-9	---	<10	C	A
N-Nitrosodi-n-propylamine C	621-64-7	---	<10	C	A
N-Nitrosodiphenylamine C	86-30-6	---	<10	C	A
Pyrene	129-00-0	10.0	<10	C	A
1,2,4-Trichlorobenzene	120-82-1	10.0	<10	C	A
Acrolein	107-02-8	---	<50	C	A
Acrylonitrile C	107-13-1	---	<10	C	A
Benzene C	71-43-2	10.0	<10	C	A
Bromoform C	75-25-2	10.0	<10	C	A
Carbon Tetrachloride C	56-23-5	10.0	<10	C	A
Chlorobenzene	108-90-7	50.0	<50	C	A
Chlorodibromomethane C	124-48-1	10.0	<10	C	A
Chloroform	67-66-3	10.0	<10	C	A
Dichlorobromomethane C	75-27-4	10.0	<10	C	A
1,2-Dichloroethane C	107-06-2	10.0	<10	C	A
1,1-Dichloroethylene	75-35-4	10.0	<10	C	A
1,2-trans-dichloroethylene	156-60-5	---	<10	C	A
1,2-Dichloropropane C	78-87-5	---	<10	C	A
1,3-Dichloropropene C	542-75-6	---	<10	C	A
Ethylbenzene	100-41-4	10.0	<10	C	A
Methyl Bromide	74-83-9	---	<10	C	A
Methylene Chloride C	75-09-2	20.0	<20	C	A
1,1,2,2-Tetrachloroethane C	79-34-5	---	<10	C	A
Tetrachloroethylene	127-18-4	10.0	<10	C	A
Toluene	10-88-3	10.0	<10	C	A
1,1,2-Trichloroethane C	79-00-5	---	<10	C	A
Trichloroethylene C	79-01-6	10.0	<10	C	A

Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
Vinyl Chloride [C]	75-01-4	10.0	<10	c	A
Beta Particle & Photon Activity (mrem/yr)	N/A	---	Applicable to PWS waters only	---	---
Combined Radium 226 and 228 (pCi/L)	N/A	---	Applicable to PWS waters only	---	---
Gross Alpha Particle Activity (pCi/L)	N/A	---	Applicable to PWS waters only	---	---
Uranium	N/A	---	Applicable to PWS waters only	---	---
2-Chlorophenol	95-57-8	10.0	<10	c	A
2,4-Dichlorophenol	120-83-2	10.0	<10	c	A
2,4-Dimethylphenol	105-67-9	10.0	<10	c	A
2,4-Dinitrophenol	51-28-5	---	<50	c	A
2-Methyl-4,6-Dinitrophenol	534-52-1	---	<50	c	A
Nonylphenol	104-40-51	---	Monitoring required in the permit.		
Pentachlorophenol [C]	87-86-5	50.0	<50	c	A
Phenol	108-95-2	10.0	<10	c	A
2,4,6-Trichlorophenol[C]	88-06-2	10.0	<10	c	A
Ammonia-N (mg/L) (Jun-Dec)	766-41-7	0.2 mg/L	Not applicable	---	---
Ammonia-N (mg/L) (Jan-May)	766-41-7	0.2 mg/L	Not applicable	---	---
Chloride (mg/L)	16887-00-6	---	397	b	C.2.
TRC (mg/L)	7782-50-5	0.1 mg/L	Default = 20 mg/L	d	C.2.
Cyanide, Free	57-12-5	10.0	<10	c	A
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin)	1746-01-6	0.01	Applicable to Paper Mills & Oil Refineries only	---	---
Foaming Agents (as MBAS)	N/A	---	Applicable to PWS waters only	---	---
Hydrogen Sulfide	7783-06-4	---	<1.0 mg/L	c	A
Nitrate as N (mg/L)	14797-55-8	---	Applicable to PWS waters only	---	---
Sulfate (mg/L)	N/A	---	Applicable to PWS waters only	---	---
Total Dissolved Solids (mg/L)	N/A	---	Applicable to PWS waters only	---	---
Hardness (mg/L as $CaCO_3$)	471-34-1	---	664 mg/L	c	A

"Type" column indicates a category assigned to the referenced substance (see below):
A = Acid Extractable Organic Compounds
B = Base/Neutral Extractable Organic Compounds
M = Metals
p = PCBs
P = Pesticides
R = Radionuclides
V = Volatile Organic Compounds
X = Miscellaneous Compounds and Parameters

The **superscript "C"** following the parameter name indicates that the substance is a known or suspected carcinogen; human health criteria at risk level 10^{-5}.

"Source of Data" codes:
a = permittee monitoring submitted November 2008
b = assumed value used to trigger a limit, based on WQS protection
c = permittee monitoring submitted December 2011
d = default effluent concentration
e = permittee monitoring submitted March 2012
f = permittee monitoring submitted in 2005

"Data Evaluation" codes:
See section titled PROTOCOL FOR THE EVALUATION OF EFFLUENT TOXIC POLLUTANTS for an explanation of the code used.

CASRN = Chemical Abstract Service Registry Number for each parameter is referenced in the current Water Quality Standards. A unique numeric identifier designating only one substance. The Chemical Abstract Service is a division of the American Chemical Society.

STAT.EXE RESULTS – OUTFALL 001:

Chromium III Chronic averaging period = 4 WLAa = 1900 WLAc = 250 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 3.24 Variance = 3.77913 C.V. = 0.6 97th percentile daily values = 7.88427 97th percentile 4 day average = 5.39068 97th percentile 30 day average= 3.90761 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data No Limit is required for this material The data are: 3.24	**Chromium VI** Chronic averaging period = 4 WLAa = 17 WLAc = 12 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 5 Variance = 9 C.V. = 0.6 97th percentile daily values = 12.1670 97th percentile 4 day average = 8.31895 97th percentile 30 day average= 6.03026 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data No Limit is required for this material The data are: 5	**Chloride** Chronic averaging period = 4 WLAa = 920 WLAc = 250 Q.L. = 1 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 151 Variance = 8208.36 C.V. = 0.6 97th percentile daily values = 367.446 97th percentile 4 day average = 251.232 97th percentile 30 day average= 182.114 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data A limit is needed based on Chronic Toxicity Maximum Daily Limit = 365.643696013307 Average Weekly Limit = 365.643696013307 Average Monthly Limit = 365.643696013307 The data are: 151
Nickel Chronic averaging period = 4 WLAa = 630 WLAc = 71 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 3.17 Variance = 3.61760 C.V. = 0.6 97th percentile daily values = 7.71393 97th percentile 4 day average = 5.27421 97th percentile 30 day average= 3.82318 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data No Limit is required for this material The data are: 3.17	**Zinc** Chronic averaging period = 4 WLAa = 400 WLAc = 410 Q.L. = 2 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 3.94 Variance = 5.58849 C.V. = 0.6 97th percentile daily values = 9.58766 97th percentile 4 day average = 6.55533 97th percentile 30 day average= 4.75184 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data No Limit is required for this material The data are: 3.94	**Copper** Chronic averaging period = 4 WLAa = 53 WLAc = 32 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 2.62 Variance = 2.47118 C.V. = 0.6 97th percentile daily values = 6.37555 97th percentile 4 day average = 4.35913 97th percentile 30 day average= 3.15985 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data No Limit is required for this material The data are: 2.62
TRC Chronic averaging period = 4 WLAa = 0.02 WLAc = 0.012 Q.L. = 0.1 # samples/mo. = 30 # samples/wk. = 7 Summary of Statistics: # observations = 1 Expected Value = 20 Variance = 144 C.V. = 0.6 97th percentile daily values = 48.6683 97th percentile 4 day average = 33.2758 97th percentile 30 day average= 24.1210 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data A limit is needed based on Chronic Toxicity Maximum Daily Limit = 1.75508974086388E-02 Average Weekly Limit = 1.07184595324212E-02 Average Monthly Limit = 8.69859620059178E-03 The data are: 20		

STAT.EXE RESULTS – OUTFALL 004:

Arsenic Chronic averaging period = 4 WLAa = 660 WLAc = 430 Q.L. = 1 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 10 Variance = 36 C.V. = 0.6 97th percentile daily values = 24.3341 97th percentile 4 day average = 16.6379 97th percentile 30 day average= 12.0605 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data No Limit is required for this material The data are: 10	**Zinc** Chronic averaging period = 4 WLAa = 90 WLAc = 100 Q.L. = 2 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 10 Variance = 36 C.V. = 0.6 97th percentile daily values = 24.3341 97th percentile 4 day average = 16.6379 97th percentile 30 day average= 12.0605 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data No Limit is required for this material The data are: 10	**Chromium III** Chronic averaging period = 4 WLAa = 460 WLAc = 68 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 10 Variance = 36 C.V. = 0.6 97th percentile daily values = 24.3341 97th percentile 4 day average = 16.6379 97th percentile 30 day average= 12.0605 # < Q.L. = 0 Model used = BPJ Assumptio ns, type 2 data No Limit is required for this material The data are: 10
Chromium VI Chronic averaging period = 4 WLAa = 31 WLAc = 32 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 2 Expected Value = 9 Variance = 29.16 C.V. = 0.6 97th percentile daily values = 21.9007 97th percentile 4 day average = 14.9741 97th percentile 30 day average= 10.8544 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data No Limit is required for this material The data are: 13, 5	**Chloride** Chronic averaging period = 4 WLAa = 1700 WLAc = 660 Q.L. = 1.0 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 397 Variance = 56739.2 C.V. = 0.6 97th percentile daily values = 966.066 97th percentile 4 day average = 660.524 97th percentile 30 day average= 478.803 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data A limit is needed based on Chronic Toxicity Maximum Daily Limit = 965.299357475133 Average Weekly Limit = 965.299357475133 Average Monthly Limit = 965.299357475133 The data are: 397	**TRC** Chronic averaging period = 4 WLAa = 0.037 WLAc = 0.032 Q.L. = 0.1 # samples/mo. = 30 # samples/wk. = 7 Summary of Statistics: # observations = 1 Expected Value = 20 Variance = 144 C.V. = 0.6 97th percentile daily values = 48.6683 97th percentile 4 day average = 33.2758 97th percentile 30 day average= 24.12 10 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data A limit is needed based on Acute Toxicity Maximum Daily Limit = 0.037 Average Weekly Limit = 0.022596166649825 Average Monthly Limit = 1.83379830631041E-02 The data are: 20
Copper Chronic averaging period = 4 WLAa = 9.1 WLAc = 7.8 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 3.2 Variance = 3.6864 C.V. = 0.6 97th percentile daily values = 7.78693 97th percentile 4 day average = 5.32412 97th percentile 30 day average= 3.85937 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data No Limit is required for this material The data are: 3.2	**Lead** Chronic averaging period = 4 WLAa = 51 WLAc = 6.6 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 2 Variance = 1.44 C.V. = 0.6 97th percentile daily values = 4.86683 97th percentile 4 day average = 3.32758 97th percentile 30 day average= 2.41210 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data No Limit is required for this material The data are: 2	**Nickel** Chronic averaging period = 4 WLAa = 140 WLAc = 18 Q.L. = 0.5 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 10 Variance = 36 C.V. = 0.6 97th percentile daily values = 24.3341 97th percentile 4 day average = 16.6379 97th percentile 30 day average= 12.0605 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data No Limit is required for this material The data are: 10

Selenium	**Silver**
Chronic averaging period = 4	Chronic averaging period = 4
WLAa = 39	WLAa = 0.79
WLAc = 14	WLAc =
Q.L. = 2	Q.L. = 0.2
# samples/mo. = 1	# samples/mo. = 1
# samples/wk. = 1	# samples/wk. = 1
Summary of Statistics:	Summary of Statistics:
# observations = 1	# observations = 1
Expected Value = 3	Expected Value = .3
Variance = 3.24	Variance = .0324
C.V. = 0.6	C.V. = 0.6
97th percentile daily values = 7.30025	97th percentile daily values = .730025
97th percentile 4 day average = 4.99137	97th percentile 4 day average = .499137
97th percentile 30 day average= 3.61815	97th percentile 30 day average= .361815
# < Q.L. = 0	# < Q.L. = 0
Model used = BPJ Assumptions, type 2 data	Model used = BPJ Assumptions, type 2 data
No Limit is required for this material	No Limit is required for this material
The data are: 3	The data are: 0.3

WHOLE EFFLUENT TOXICITY (WET) EVALUATION:

Applicability of TMP: The applicability criteria for a facility to perform toxicity testing is contained in the Department's Guidance memo No. 00-2012, Toxics Management Program (TMP) Implementation Guidance, 08/24/00, Part IV. This discharge qualifies as being subject to TMP requirements because:

- It is a Major Industrial facility
- Standard Industrial Code (SIC) of 4911 (Electric Services) is listed in Appendix A of the TMP guidance
- The Instream Waste Concentration (IWC) is greater than or equal to 33%

Description of Outfalls:

Internal Outfall 101 (Low Volume Waste Stream) and Internal Outfall 201 (Cooling Tower Blowdown) are discharged to a Detention Pond. The effluent from the Detention Pond is discharged to Middle Fork Cunningham Creek through Outfall 001.

On February 1, 2010, the permit was modified to add a new Outfall 004 discharge to the Rivanna River via a 6.5 mile pipeline. The rationale for the modification was to improve operational flexibility which was limited by the low assimilative capacity of Middle Fork Cunningham Creek.

The sampling location is the effluent from the Detention Pond. Therefore the sampling location for Outfall 001 and Outfall 004 is identical. After sampling, the effluent is pumped to either Outfall 001 or Outfall 004.

Because Outfall 004 is now in operation, Outfall 001 is used infrequently such as occasions on which Outfall 004 or its conveying pipeline are out of service.

Outfalls 002 and 003 are storm water associated with industrial activity. TMP monitoring is not required.

Design Flow: A design flow is established for any outfall associated with a wastewater treatment facility. In the case of Tenaska, the operations producing the wastewater and the treatment facilities serving outfalls 001 and 004 are the same. The 2012 application indicates a minor change in the design flow specified for Outfall 001. The table below indicates the history of when the design flows for outfalls 001 and 004 were established:

Outfall Number	2007 Fact Sheet	2009 Permit Modification	2012 Permit Application
001	1.157 MGD	----------	1.25 MGD
004	----------	1.73 MGD	1.73 MGD

Sample Type: A sample type of 24 hour composite is representative of the discharge.

Sampling Frequency: The permit was originally issued on May 13, 2002. The first discharge commenced in January 2004. Toxicity screening was established as quarterly acute and chronic effluent toxicity monitoring for a period of three years. The sampling frequency after the toxicity screening was completed was established as semi-annual. This sampling frequency was carried forward in the 2007 permit reissuance, the 2010 permit modification, and will be continued in the 2012 reissuance. The rationale for the sampling frequency is based on the possibility of effluent toxicity from chemical additives, especially the use of settling aids. In addition, there were concerns that the discharge volumes and concentrations had the chance to vary widely depending upon the current market demand for electricity.

Intermittent Discharge: In letters dated November 1, 2006 and March 6, 2007, the permittee provided documentation regarding the intermittent nature of the discharge from the Detention Pond. It was noted that discharge volumes are dependent on current market demand for electricity. As a result of this documentation, the following two conditions are currently in the 2007 and 2010 permit language in the Toxics Management Program for both Outfalls 001 and 004:

1. Chronic toxicity testing is required in every quarterly monitoring period when a discharge lasts for more than 120 consecutive hours. If the discharge lasts for less than 120 consecutive hours, there is inadequate flow to perform the chronic toxicity test and only acute toxicity testing requirements apply. If the flow is inadequate for performing the chronic toxicity test in any quarter, the permittee must submit data (e.g., daily logs) adequate to demonstrate this condition existed.

2. If through experience and/or operational controls, it can be predicted that the discharge will be less than 1% of the receiving stream at 7Q10 flows, the discharge is not expected to cause instream chronic toxicity and the chronic tests do not apply. The permittee must submit adequate documentation to demonstrate this condition in any quarter in which a discharge occurred, but was not monitored because this condition existed.

For Outfall 001, 1% of the receiving stream 7Q10 flow is: (0.01)(0.097 MGD) = 0.00097 MGD

For Outfall 004, 1% of the receiving stream 7Q10 is: (0.01)(18.1 MGD) = 0.181 MGD

In the 2012 permit, the intermittent discharge language will be continued for Outfalls 001 and 004 with the following revision:

Reference to acute toxicity testing was removed.

Alternate Toxicity Testing Procedure: The permittee contacted DEQ in December 2008 and stated that they had failed their October 2008 chronic toxicity test for *Pimephales promelas* at Outfall 001 and believed that it was due to biological interference. The permittee had their lab set up parallel toxicity tests. One test was run on "untreated" effluent. The other test was "UV Irradiated". The results of the parallel tests were submitted to Deborah DeBiasi, DEQ for review. On July 9, 2009, Deborah DeBiasi approved the alternate testing for future Whole Effluent Toxicity (WET) tests. The permittee was instructed to run both treated and untreated controls and 100% effluent in the future.

Summary of Toxicity Testing: Tables 1 and 2 contain a summary of the toxicity testing results during the term of the current permit.

Approach for Evaluation of Toxicity Testing Data:

In the case of Tenaska, the effluent from the Detention Pond is pumped to either Outfall 001 or Outfall 004. When samples are collected from the effluent from the Detention Pond, the data are reported under Outfall 001, Outfall 004, or in rare occasions, under both Outfalls 001 and 004. Since the wastewater is the same and the only difference is which outfall it is discharged through, it is appropriate in this case to evaluate all of the toxicity data under Outfall 001 criteria and then all of the toxicity data under Outfall 004 criteria.

The toxicity data were evaluated using the procedures outlined in the TMP guidance.

Evaluation of Acute Instream Waste Concentration (IWCa):

Outfall 001: The IWCa for Outfall 001 is 93.7% (see Table 3). Because the IWCa is greater than 33%, the NOAEC criterion applies to the acute tests. The NOAEC shall be 100%, which is equivalent to an acute Toxicity Unit (TUa) of 1.0. If the mean of the data exceeds a 1.0 TUa, a limit may result from use of Agency software for performing the reasonable potential analysis for instream toxicity.

Outfall 004: The IWCa for Outfall 004 is 51.55% (See Table 4). Because the IWCa is greater than 33%, the NOAEC criterion applies to the acute tests. The NOAEC shall be 100%, which is equivalent to an acute Toxicity Unit (TUa) of 1.0. If the mean of the data exceeds a 1.0 TUa, a limit may result from use of Agency software for performing the reasonable potential analysis for instream toxicity.

Evaluation of WLAs and Dilution Series: The WLAs and dilution series for Outfalls 001 and 004 are contained in Tables 3 and 4.

Stat.exe Limit Evaluation:

The WLAs are used in the Department's Stat.exe program in order to perform a statistical evaluation of the acute and chronic test results expressed as Toxicity Units (TUs). The toxicity data are analyzed separately by species and test type (acute or chronic).

Acute Stat.exe Limit Evaluation at Outfalls 001 and 004:

The summary of the acute toxicity testing data at Outfall 001 in Table 1 and Outfall 004 in Table 2 shows that the NOAEC in every test was 100%. In addition, the Acute Wasteload Allocation is 0.32016. Because the WLAa is less than 1.0, and the test can only evaluate results down to 1.0, Stat.exe was not used.

Based upon acute data showing no acute toxicity, acute monitoring will no longer be required. The permit includes a condition that acute monitoring be done if the 48 Hour LC_{50} in the chronic tests is = 100%.

Chronic Stat.exe Limit Evaluation:

The chronic toxicity test results summarized in Table 2 were entered into the Department's Stat.exe program to determine if WET limits were required. Table 5 indicates that no chronic toxicity limits are required at either Outfall 001 or 004.

Midpoint Check Stat.exe Evaluation:

Midpoint checks are not necessary 1) if a WET limit is required or 2) if acute toxicity monitoring is required and the recommended dilution series is the standard 0.5 series. Midpoint checks are generally necessary for chronic toxicity monitoring.

Outfall 001: The recommended dilution series for the acute and chronic toxicity testing is the standard dilution series. Therefore a midpoint check is not required.

Outfall 004: The recommended dilution series for the acute toxicity testing is the standard dilution series. Therefore a midpoint check is not required. The midpoint of the chronic dilution series for Outfall 004 is TUc = 2.38 or 42% (Table 4a). The midpoint of the chronic test dilution series for Outfall 004 was evaluated using Stat.exe to determine if a limit would be inappropriately triggered. The midpoint was entered as a chronic Toxicity Unit (TUc). Since no limit was triggered by the midpoint, the recommended dilution series can be used without the need for adjustment. If the mean of the data exceeds 2.39 TUc, a limit may result from use of Agency software for performing the reasonable potential analysis for instream toxicity.

Peer Reviewer: DMJ (05.02.12)

Table 1
Summary of Acute Toxicity Testing (NOAEC) – Outfalls 001 and 004

Quarterly Monitoring Period	Outfall	Test Date	48-Hr. Static Acute *Ceriodaphnia dubia* (TUa)	48-Hr Static Acute *Pimephales promelas* (TUa)
1st Quarter	001	07/25/07	1.0	1.0
2nd Quarter	001	10/17/07	1.0	1.0
3rd Quarter	001	01/23/08 & 03/05/08	1.0, 1.0	1.0, 1.0
4th Quarter	001	06/18/08	1.0	1.0
5th Quarter	001	08/24/08	1.0	1.0
6th Quarter	001	10/12/08	1.0	1.0
7th Quarter	001	03/03/09	1.0	1.0
8th Quarter	001	05/13/09	1.0	1.0
9th Quarter	001	07/22/09	1.0	1.0
10th Quarter	001	10/07/09	1.0	1.0
11th Quarter	001	01/13/10	1.0	1.0
12th Quarter	001	06/21/10	1.0	1.0
13th Quarter	001	08/17/10	1.0	1.0
14th Quarter	001	10/13/10	1.0	1.0
1st Quarter	004	03/02/11	1.0	1.0
2nd Quarter	004	06/05/11	1.0	1.0
3rd Quarter	004	08/16/11	1.0	1.0
4th Quarter	004	10/12/11	1.0	1.0
5th Quarter	004	01/18/12	1.0	1.0

Notes for Table 1:

1. The Permittee began discharging through an new Outfall 004 in December 2010. The permit still allows the option to discharge through Outfall 001 as well.

2. The facility will not "generate" a discharge to meet a test requirement. Instead, the DMRs submitted for Outfall 001 will document if there was a discharge from Outfall 001. If there is no discharge during the quarter for Outfall 001, then no toxicity testing is required.

Table 2
Summary of Chronic Toxicity Testing – Outfalls 001 and 004

Monitoring Period And Outfall	Test Date	Chronic 3-Brood Static Renewal Survival and Reproduction *Ceriodaphnia dubia* (TUc)				Chronic 7-Day Static Renewal Survival and Growth *Pimephales promelas* (TUc)			
		Survival (TUc)	Repro (TUc)	48-hr LC_{50}	% Surv in 100%	Survival (TUc)	Growth (TUc)	48-hr LC_{50}	% Surv in 100%
1st Quarter (001)	07/25/07	1.0	1.02	>100	100	1.0	1.0	>100	100
2nd Quarter (001)	10/17/07	1.0	1.0	>100	90	1.0	1.0	>100	95
3rd Quarter (001)	01/23/08	1.0	1.0	>100	100	1.0	1.0	>100	100
	03/05/08	1.0	1.0	>100	100	1.2	1.45	>100	65
4th Quarter (001)	06/18/08	1.0	1.0	>100	100	1.0	1.0	>100	93
5th Quarter (001)	08/24/08	1.0	1.0	>100	100	1.0	1.0	>100	100
6th Quarter (001)	10/12/08	1.0	1.0	>100	100	>2.13	>2.13	>100	18
7th Quarter (001)	03/03/09	1.0	1.0	------	------	2.13	2.13	-----	-----
				>100	100	1.0 *	1.0 *	>100	100
8th Quarter (001)	05/13/09	1.0	1.0	-----	------	>2.13	>2.13	-----	-----
				>100	100	1.0 *	1.0 *	>100	95
9th Quarter (001)	07/21/09	1.0	1.0	>100	90	1.0 *	1.0 *	>100	88
10th Quarter (001)	10/07/09	1.0	1.0	>100	100	1.0 *	1.0 *	>100	93
11th Quarter (001)	01/12/10	1.0	1.0	>100	100	1.0 *	1.0 *	>100	95
12th Quarter (001)	06/18/10	1.0	1.0	>100	100	1.0 *	1.0 *	>100	98
13th Quarter (001)	08/17/10	1.0 *	1.0 *	>100	100	1.0 *	1.0 *	>100	98
14th Quarter (001)	10/13/10	1.0 *	1.2 *	>100	90	1.0 *	1.0 *	>100	98
1st Quarter (004)	03/01/11	1.0	1.0	>100	100	1.0	1.0	>100	98
2nd Quarter (004)	06/14/11	1.0	1.0	>100	90	1.0	1.0	>100	100
3rd Quarter (004)	08/16/11	1.0	1.0	>100	100	1.0	1.0	>100	90
4th Quarter (004)	10/11/11	1.0	1.0	>100	100	1.0	1.0	>100	95
5th Quarter (004)	01/17/12	1.0	1.0	>100	90	1.0	1.0	>100	90

* UV Irradiated

Notes for Table 2:

1. The 6th Quarterly test results on October 12, 2008 were reported as >2.13. The lab indicated it was likely a fish pathogen problem. A retest was done on March 3, 2009 and DEQ agreed that it was a fish pathogen problem.

2. The extra testing "untreated" data on March 3, 2009 and May 13, 2009 are for informational purposes. Only the extra testing "UV Irradiated" is used in the Departments Stat.exe evaluation.

3. In a letter dated April 27, 2012, the permittee requested that DEQ only use chronic WET testing results for *Pimephales promelas* from 2009 and later in the reasonable potential analysis. The rationale for the request was based on a review of the March 2008 chronic fathead minnow test in which the lab stated that there was likely pathogen interference and the fact that pathogen interference was documented shortly thereafter.

Table 3
WETLim10.xls Spreadsheet – Outfall 001

Spreadsheet for determination of WET test endpoints or WET limits

	Excel 97			Acute Endpoint/Permit Limit			Use as LC_{50} in Special Condition, as TUa on DMR					
	Revision Date: 01/10/05											
	File: WETLIM10.xls			ACUTE	100% =	NOAEC	LC_{50} =	NA	% Use as	NA	TUa	
	(MIX.EXE required also)											
				ACUTE WLAa		0.32016	Note: Inform the permittee that if the mean of the data exceeds					
							this TUa:	1.0	a limit may result using WLA.EXE			
				Chronic Endpoint/Permit Limit			Use as NOEC in Special Condition, as TUc on DMR					
				CHRONIC	1.57607048	$T U_c$	NOEC =	64	% Use as	1.56	$T U_c$	
				BOTH*	3.20160008	$T U_c$	NOEC =	32	% Use as	3.12	$T U_c$	
	Enter data in the cells with blue type:			AML	1.57607048	$T U_c$	NOEC =	64	% Use as	1.56	$T U_c$	
	Entry Date:	01/24/12		ACUTE WLAa,c		3.2016		Note: Inform the permittee that if the mean				
	Facility Name:	Tenaska Virginia Generati		CHRONIC WLAc		1.0776		of the data exceeds this TUc:		1.0		
	VPDES Number:	VA0090905		* Both means acute expressed as chronic				a limit may result using WLA.EXE				
	Outfall Number:	001										
				% Flow to be used from MIX.EXE				Difuser /modeling study?				
	Plant Flow:	1.25	MGD					Enter Y/N	N			
	Acute 1Q10:	0.084	MGD	100	%			Acute	1	:1		
	Chronic 7Q10:	0.097	MGD	100	%			Chronic	1	:1		
	Are data available to calculate CV? (Y/N)			N	(Minimum of 10 data points, same species, needed)					Go to Page 2		
	Are data available to calculate ACR? (Y/N)			N	(NOEC<LC50, do not use greater/less than data)					Go to Page 3		
	IWC_a	93.70314843	%	Plant flow/plant flow + 1Q10			NOTE: If the IWCa is >33%, specify the					
	IWC_c	92.79881218	%	Plant flow/plant flow + 7Q10			NOAEC = 100% test/endpoint for use					
	Dilution, acute	1.0672		100/IWCa								
	Dilution, chronic	1.0776		100/IWCc								
	WLA_a	0.32016		Instream criterion (0.3 TUa) X's Dilution, acute								
	WLA_c	1.0776		Instream criterion (1.0 TUc) X's Dilution, chronic								
	$WLA_{a,c}$	3.2016		ACR X's WLA_a - converts acute WLA to chronic units								
	ACR -acute/chronic ratio	10		LC50/NOEC (Default is 10 - if data are available, use tables Page 3)								
	CV-Coefficient of variation	0.6		Default of 0.6 - if data are available, use tables Page 2)								
	Constants eA	0.4109447		Default = 0.41								
	eB	0.6010373		Default = 0.60								
	eC	2.4334175		Default = 2.43								
	eD	2.4334175		Default = 2.43 (1 samp)	No. of sample	1	**The Maximum Daily Limit is calculated from the lowest					
							LTA, X's eC. The LTAa,c and MDL using it are driven by the ACR.					
	$LTA_{a,c}$	1.315680552		WLAa,c X's eA								
	LTA_c	0.647677794		WLAc X's eB						Rounded NOEC's		%
	MDL** with $LTA_{a,c}$	3.201600078	TU_c	NOEC =	31.234382		(Protects from acute/chronic toxicity)			NOEC =	32	%
	MDL** with LTA_c	1.576070479	TU_c	NOEC =	63.448939		(Protects from chronic toxicity)			NOEC =	64	%
	AML with lowest LTA	1.576070479	TU_c	NOEC =	63.448939		Lowest LTA X's eD			NOEC =	64	
	IF ONLY ACUTE ENDPOINT/LIMIT IS NEEDED, CONVERT MDL FROM TU_c to TU_a											
										Rounded LC50's		%
	MDL with $LTA_{a,c}$	0.320160008	TU_a	LC50 =	312.343820	%	Use NOAEC=100%			LC50 =	NA	%
	MDL with LTA_c	0.157607048	TU_a	LC50 =	634.489392	%	Use NOAEC=100%			LC50 =	NA	

CHRONIC DILUTION SERIES TO RECOMMEND

Table 3a. - Outfall 001 - Design Flow = 1.25 MGD	Monitoring		Limit	
	% Effluent	TUc	% Effluent	TUc
Dilution series based on data mean	100	1.000000		
Dilution series to use for limit			64	1.56
Dilution factor to recommend:	0.5		0.8	
Dilution series to recommend:	100.0	1.00	100.0	1.00
	50.0	2.00	80.0	1.25
	25.0	4.00	64.0	1.56
	12.5	8.00	51.2	1.95
	6.3	16.00	41.0	2.44
Extra dilutions if needed	3.12	32.05	32.77	3.05
	1.56	64.10	26.21	3.81

Table 4
WETLim10.xls Spreadsheet – Outfall 004

Spreadsheet for determination of WET test endpoints or WET limits

	Excel 97			Acute Endpoint/Permit Limit			Use as LC_{50} in Special Condition, as TUa on DMR						
	Revision Date: 01/10/05												
	File: WETLIM10.xls			ACUTE	100% =	NOAEC	LC_{50} =	NA	% Use as	NA	TUa		
	(MIX.EXE required also)												
				ACUTE WLAa		0.5819566	Note: Inform the permittee that if the mean of the data exceeds						
							this TUa:	1.0	a limit may result using WLA.EXE				
				Chronic Endpoint/Permit Limit			Use as NOEC in Special Condition, as TUc on DMR						
				CHRONIC	5.81956662	T U_c	NOEC =	18	% Use as	5.55	T U_c		
				BOTH*	5.81956662	T U_c	NOEC =	18	% Use as	5.55	T U_c		
	Enter data in the cells with blue type:			AML	5.81956662	T U_c	NOEC =	18	% Use as	5.55	T U_c		
	Entry Date:	11/29/11		ACUTE WLAa,c		5.8195665	Note: Inform the permittee that if the mean						
	Facility Name:	Tenaska Virginia Generati		CHRONIC WLAc		11.462428	of the data exceeds this TUc:				2.3915199		
	VPDES Number:	VA0090905		* Both means acute expressed as chronic			a limit may result using WLA.EXE						
	Outfall Number:	004											
				% Flow to be used from MIX.EXE			Difuser /modeling study?						
	Plant Flow:	1.73	MGD				Enter Y/N	N					
	Acute 1Q10:	15.5	MGD	10.49	%		Acute	1	:1				
	Chronic 7Q10:	18.1	MGD	100	%		Chronic	1	:1				
	Are data available to calculate CV? (Y/N)			N	(Minimum of 10 data points, same species, needed)					Go to Page 2			
	Are data available to calculate ACR? (Y/N)			N	(NOEC<LC50, do not use greater/less than data)					Go to Page 3			
	IWC_a	51.55023168	%	Plant flow/plant flow + 1Q10			NOTE: If the IWCa is >33%, specify the						
	IWC_c	8.72415532	%	Plant flow/plant flow + 7Q10			NOAEC = 100% test/endpoint for use						
	Dilution, acute	1.939855491		100/IWCa									
	Dilution, chronic	11.46242775		100/IWCc									
	WLA_a	0.581956647	Instream criterion (0.3 TUa) X's Dilution, acute										
	WLA_c	11.46242775	Instream criterion (1.0 TUc) X's Dilution, chronic										
	$WLA_{a,c}$	5.819566474	ACR X's WLA_a - converts acute WLA to chronic units										
	ACR -acute/chronic ratio	10	LC50/NOEC (Default is 10 - if data are available, use tables Page 3)										
	CV-Coefficient of variation	0.6	Default of 0.6 - if data are available, use tables Page 2)										
	Constants eA	0.4109447	Default = 0.41										
	eB	0.6010373	Default = 0.60										
	eC	2.4334175	Default = 2.43										
	eD	2.4334175	Default = 2.43 (1 samp)	No. of sample	1		**The Maximum Daily Limit is calculated from the lowest						
							LTA, X's eC. The LTAa,c and MDL using it are driven by the ACR.						
	$LTA_{a,c}$	2.391519999	WLAa,c X's eA										
	LTA_c	6.889346624	WLAc X's eB							Rounded NOEC's		%	
	MDL** with $LTA_{a,c}$	5.819566617	TU_c	NOEC =	17.183410	(Protects from acute/chronic toxicity)				NOEC =	18	%	
	MDL** with LTA_c	16.76465664	TU_c	NOEC =	5.964930	(Protects from chronic toxicity)				NOEC =	6	%	
	AML with lowest LTA	5.819566617	TU_c	NOEC =	17.183410	Lowest LTA X's eD				NOEC =	18		
	IF ONLY ACUTE ENDPOINT/LIMIT IS NEEDED, CONVERT MDL FROM TU_c to TU_a												
										Rounded LC50's		%	
	MDL with $LTA_{a,c}$	0.581956662	TU_a	LC50 =	171.834101	%	Use NOAEC=100%			LC50 =	NA	%	
	MDL with LTA_c	1.676465664	TU_a	LC50 =	59.649298	%				LC50 =	60		

CHRONIC DILUTION SERIES TO RECOMMEND

Table 4a. - Outfall 004 - Design Flow = 1.73 MGD	Monitoring		Limit	
	% Effluent	TUc	% Effluent	TUc
Dilution series based on data mean	42	2.391520		
Dilution series to use for limit			18	5.56
Dilution factor to recommend:	0.64807407		0.424264069	
Dilution series to recommend:	100.0	1.00	100.0	1.00
	64.8	1.54	42.4	2.36
	42.0	2.38	18.0	5.56
	27.2	3.67	7.6	13.09
	17.6	5.67	3.2	30.86
Extra dilutions if needed	11.43	8.75	1.37	72.75
	7.41	13.50	0.58	171.47

Table 5 – Stat.exe Results

Outfall 001-Chronic WET Pp Chronic averaging period = 4 WLAa,c = 3.2016 WLAc = 1.0776 Q.L. = 1 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 13 Expected Value = 1 Variance = 0 C.V. = 0 97th percentile daily values = 1 97th percentile 4 day average = 1 97th percentile 30 day average= 1 # < Q.L. = 0 Model used = lognormal No Limit is required for this material The data are: 1,1,1,1,1,1,1,1,1,1,1,1,1	**Outfall 001-Chronic WET Cd** Chronic averaging period = 4 WLAa,c = 3.2016 WLAc = 1.0776 Q.L. = 1 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 19 Expected Value = 1.01157 Variance = .001791 C.V. = 4.184005 97th percentile daily values = 1.09341 97th percentile 4 day average = 1.05194 97th percentile 30 day average= 1.02611 # < Q.L. = 0 Model used = lognormal No Limit is required for this material The data are:1.02,1,1,1,1,1,1,1,1,1,1,1,1,1.2,1,1,1,1
Outfall 004-Chronic WET Pp Chronic averaging period = 4 WLAa,c = 5.8195665 WLAc = 11.462428 Q.L. = 1 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 13 Expected Value = 1 Variance = 0 C.V. = 0 97th percentile daily values = 1 97th percentile 4 day average = 1 97th percentile 30 day average= 1 # < Q.L. = 0 Model used = lognormal No Limit is required for this material The data are: 1,1,1,1,1,1,1,1,1,1,1,1,1	**Outfall 004-Chronic WET Cd** Chronic averaging period = 4 WLAa,c = 5.8195665 WLAc = 11.462428 Q.L. = 1 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 19 Expected Value = 1.01157 Variance = .001791 C.V. = 4.184005 97th percentile daily values = 1.09341 97th percentile 4 day average = 1.05194 97th percentile 30 day average= 1.02611 # < Q.L. = 0 Model used = lognormal No Limit is required for this material The data are: 1.02,1,1,1,1,1,1,1,1,1,1,1,1,1.2,1,1,1,1
Outfall 004 -Midpoint Check-Chronic Chronic averaging period = 4 WLAa,c = 5.81956647 WLAc = 11.4624277 Q.L. = 1 # samples/mo. = 1 # samples/wk. = 1 Summary of Statistics: # observations = 1 Expected Value = 2.38 Variance = 2.03918 C.V. = 0.6 97th percentile daily values = 5.79153 97th percentile 4 day average = 3.95982 97th percentile 30 day average= 2.87040 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data No Limit is required for this material The data are: 2.38	

APPENDIX C

BASES FOR PERMIT SPECIAL CONDITIONS

Tabulated below are the sections of the permit, with any changes and the reasons for the changes identified. Also provided is the basis for each of the permit special conditions.

Cover Page — Content and format as prescribed by the VPDES Permit Manual.

Part I.A.1. — **Effluent Limitations and Monitoring Requirements:** Bases for effluent limits provided in Appendix B of this fact sheet. Monitoring requirements as prescribed by the VPDES Permit Manual. *Updates Part I.A.1.of the previous permit* with the following:

- The monitoring frequency for $cBOD_5$ has been reduced based on previous monitoring data.
- The monitoring frequency for DO has been reduced based on previous monitoring data.
- Less stringent TRC and chloride limits have been included.

Part I.A.2. – Part I.A.5. — **Effluent Limitations and Monitoring Requirements:** Bases for effluent limits provided in Appendix B of this fact sheet. Monitoring requirements as prescribed by the VPDES Permit Manual. *Identical to Part I.A.2-5.of the previous permit.*

Part I.B. — **Effluent Limitations and Monitoring Requirements – Additional Instructions:** *Identical to Part I.B. of the previous permit*. Authorized by VPDES Permit Regulation, 9 VAC 25-31-190.J.4 and 220.I. This condition is necessary when a maximum level of quantification and/or a specific analytical method is required in order to assess compliance with a permit limit or to compare effluent quality with a numeric criterion. The condition also establishes protocols for calculation of reported values.

Part I.C. — **Toxics Management Program:** *Updates Part I.C. of the previous permit.* VPDES Permit Regulation, 9 VAC 25-31-210 and 220 I, requires monitoring in the permit to provide for and assure compliance with all applicable requirements of the State Water Control Law and the Clean Water Act.

Part I.D.1. — **95% Capacity Reopener:** *Identical to Part I.D.1. of the previous permit*. Required by VPDES Permit Regulation, 9 VAC 25-31-200 B 4 for certain permits. Included for this facility to ensure that adequate treatment capacity will continue to be provided as influent flows and/or loadings increase.

Part I.D.2. — **Notification Levels:** *Identical to Part I.D.2. of the previous permit.* Required by the VPDES Permit Regulation 9 VAC 25-31-200 A for all manufacturing, commercial, mining, and silvicultural dischargers.

Part I.D.3. — **Materials Handling/Storage:** *Identical to Part I.D.3. of the previous permit.* 9 VAC 25-31-280.B.2. requires that the types and quantities of "wastes, fluids, or pollutants which are … treated, stored, etc." be addressed for all permitted facilities.

Part I.D.4. — **O & M Manual Requirements:** *Identical to Part I.D.4. of the previous permit.* Code of Virginia at 62.1-44.16, VPDES Permit Regulation 9 VAC 25-31-190 E, and 40 CFR 122.41(e) require proper operation and maintenance of the permitted facility. Added requirement to describe procedures for documenting compliance with the permit requirement that there shall be no discharge of floating solids or visible foam in other than trace amounts.

Part I.D.5. — **Use of Chemical Additives:** *Identical to Part I.D 5. of the previous permit.* Required since the use of chemical additives have the potential to impact this facility's discharge.

Part I.D.6. — **PCB Discharge:** *Identical to Part I.D.6. of the previous permit.* Required per 40 CFR Part 423.15, Steam Electric Power Generating Point Source Category.

Part I.D.7. — **Chlorine Discharge from Cooling Tower:** *Identical to Part I.D.7. of the previous permit.* Required per 40 CFR Part 423.15, Steam Electric Power Generating Point Source Category.

Part I.D.8. **Additional Instructions Regarding 126 Priority Pollutants:** *Identical to Part I.D.8. of the previous permit.* Required per 40 CFR Part 423.15, Steam Electric Power Generating Point Source Category.

Part I.D.9. **Water Quality Criteria Monitoring:** *New requirement.* State Water Control Law at 62.1-44.21 authorizes the Board to request information needed to determine the discharge's impact on State waters. States are required to review data on discharges to identify actual or potential toxicity problems, or the attainment of water quality goals, according to 40 CFR Part 131, Water Quality Standards, subpart 131.11. To ensure that water quality criteria are maintained, the permittee is required to analyze the facility's effluent for the substances noted in Attachment B of this VPDES permit.

Part I.D.10. **Water Quality Criteria Monitoring:** *Updates Part I.D.9. of the previous permit.* State Water Control Law at 62.1-44.21 authorizes the Board to request information needed to determine the discharge's impact on State waters. States are required to review data on discharges to identify actual or potential toxicity problems, or the attainment of water quality goals, according to 40 CFR Part 131, Water Quality Standards, subpart 131.11. To ensure that water quality criteria are maintained, the permittee is required to analyze the facility's effluent for the substances noted in Attachment B of this VPDES permit.

Part I.D.11. **Reopeners:**

a. *Identical to Part I.D.11. of the previous permit.* Section 303(d) of the Clean Water Act requires that total maximum daily loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream. The reopener recognizes that, according to section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan, or other wasteload allocation prepared under section 303 of the Act.

b. *Identical to Part I.D.10. of the previous permit.* 9 VAC 25-31-390 A authorizes DEQ to modify VPDES permits to promulgate amended water quality standards.

Part I.E. **Storm Water Special Conditions**: *Updates Part.I.E., Part I.F., and Part I.G. of the previous permit.* VPDES Permit Regulation 9 VAC 25-31-10 defines discharges of storm water from industrial activity in 9 industrial categories. 9 VAC 25-31-120 requires a permit for these discharges. The Storm Water Pollution Prevention Plan requirements of the permit are derived from the VPDES general permit for discharges of storm water associated with industrial activity, 9 VAC 25-151-10 et seq. VPDES Permit Regulation, 9 VAC 25-31-220 K, requires use of best management practices where applicable to control or abate the discharge of pollutants when numeric effluent limits are infeasible or the practices are necessary to achieve effluent limit or to carry out the purpose and intent of the Clean Water Act and State Water Control Law

Part II **Conditions Applicable to All VPDES Permits:** *Updates Part II of previous permit.* VPDES Permit Regulation 9 VAC 25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed. Part II,A.4. language added for Virginia Environmental Laboratory Accreditation Program (VELAP) per 1 VAC 30, Chapter 45: Certification for Noncommercial Environmental Laboratories, and 1 VAC 30, Chapter 46: Accreditation for Commercial Laboratories.